# COMPUTERWORLD

# catch out of MAPI

By Lynda Radosevich

Microsoft Corp. last week began to deliver on its year-old promise to let corporate and third-party developers access messaging services via Windows without buying Microsoft's messaging products.

The company said it has begun limited shipment of a software developer's kit for its Messaging Application Programming Interface 1.0, which is also known as "extended' MAPI. Microsoft will demonstrate and more broadly distribute the developer's kit at the Win32 Professional Developer's Conference, to be held Dec. 13 in Anaheim, Calif.

Extended MAPI is a messaging system that is meant to allow different vendors' desktop applications and back-end messaging services to work together via Windows. Its advantage is that users can choose standard desktop inter-MAPI, page 10

More MAPI

Extended MAPI (MAPI 1.0) includes client and service provider APIs that will allow MAPI-capable clients to access any MAPI-capable back-end service

MESSAGING FRONT-END APPLICATIONS
(MICROSOFT AND NON-MICROSOFT)

MAPI CLIENT APIS

MAPI SUBSYSTEM

MAPI SERVICE PROVIDER APIS

MESSAGING BACK-END APPLICATIONS (MICROSOFT AND NON-MICROSOFT)

# Microsoft takes the IBM pumps client/server

'Starter kits' will integrate other vendors' products with its own

By Johanna Ambrosio and Elisabeth Horwitt

IBM will shore up its client/server offerings early next year with "starter kits" that will include other vendors' products for specific applications, according to sources

close to the company.

Later in the year, IBM will make public a framework detailing standards that it will support in its attempt to integrate multivendor environments in customer shops. Although IBM has not settled on a permanent name, internally the

framework is called the Open Distributed Computing System blueprint (see chart page 12).

These moves - along with the increasing popularity of OS/2 as a corporate server desktop operating system - will likely strengthen and clarify IBM's confused client/server hand, users and observers said. "It would be

helpful to know what they are going to do." said Wade Brown, executive vice president at Washington National Insurance Co.

Although IBM has recently gotten its client/server strategy together (see story page 12), it has been a long time in coming. "There are so many factions and businesses within IBM, it is tough to get consensus on anything," said Judith Hurwitz, an independent consultant in Watertown, Mass.

IBM's Client/Server Computing Unit, formed in November 1992, claims to have implemented client/ server systems at roughly 90 customer sites, but its bottom-line impact on IBM's business has been negligible so far.

#### Outsourcing EDI

#### Nintendo playing no games with holiday product deliveries

By Mark Halper

anta Claus may soon be delivering by reindeer and sleigh, but when it comes to video game cartridges, he will have plenty of help from an electronic data interchange network that Nintendo of America, Inc. is outsourcing from Unisys

The Redmond, Wash., subsidiary of \$1.2 billion Nintendo Co. recently contracted with Unicys to serve as the linchpin in a "Fast EDI' scheme. The plan is intended to slash from un average of five weeks to an average of six

days the amount of time it takes Nintendo cartridge licensees to ship products to some 15,000 retail outlets in the U.S.

Phil Rogers, Nintendo's vice president of operations, estimated that Fast EDI could annually process the sale of some 15 million cartridges, valued at about

Fast EDI will permit licensees to use Nintendo's North Bend, Wash., central warehouse rather than store products in hundreds of warehouses around the country. It will offer EDI services at a fraction of the price the license Nintendo, page 16

IBM, page 12

### Brokerages seeing IS dividends

By Thomas Hoffman

The dizzying pace of the brokerage industry's three-year profit climb stems in large part from the increasingly important role of information technology as a business strategy enabler and costcutting tool.

Industry leaders such as Merrill Lynch & Co. and Salomon Brothers. Inc. are not only padding the bottom line through data center consolidations (see story page 14) and resulting cost savings, but they are also outpacing other ver-



**Merrill Lynch Executive VP Edward Goldberg** 

tical sectors through their early adoption of advanced technologies

While the rest of the world stood still for the past three vears. Wall Street was surging ahead with new technologies,' observed Daniel G. Grant, president and chief operating officer at Tangent International, a New Yorkbased financial systems integrator.

Brokerages, he added, are lightyears ahead of other vertical markets in exploring advanced technologies such as massively parallel processing systems, neural networks and object-oriented programming tools in a never-ending bid for competitive advantage.

One reason brokerages have

Wall Street has pioneered the use of Unix, neural networks and expert system tools

been able to adopt these leadingedge technologies so quickly is that they embraced business process re-engineering dictums. Edward Goldberg, executive vice president of operations, systems Brokerages, page 14



CAN OPPONENTS GAIN a mutual competitive edge through coop-erative networks? Manufacturers in Erie, Pa., found a way, while Wall Street's best and brightest did not. Page 81.

HARRY BROWN, president of Erie's EBC Industries, Inc.

TALIVING COMPANIES THAT BETA-TEST products say the jump they get on new technology is worth the six-figure costs and staff stress that come with the territory. Page 111.

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#### ENTERPRISE NETWORKING

APPLICATION DEVELOPMENT

aren't always adequate. Page 75

work? You may have to. Page 81

■You can squeeze better

performance out of that old

mainframe, Joe Vincent at

Humana says that with cur-

rent tools, 100% CPU-busy is

achievable. Buyers' Score-

card: Users say Landmark

monitor is tops. Firing Line:

IN DEPTH

right ugly. Page 111

MANAGEMENT

information. Page 85

■ In Windows/Unix environments, emulators

■Would you allow competitors on your net-

■EDI isn't that hard, if you know where to get

THE CW GUIDE TO MAINFRAMES

■ Steven Hansen, director of IS at The Toro Co., is rebuilding the company's EDI systems to provide the quick response its retail customers now expect. Page 55

#### NEWS

■ Solaris will incorporate pieces of NextStep.

Page 4

■ Novell to bring NetWare multimedia service to Windows users. Page 4

■ Lotus and Digital discuss an Alpha AXP version of Notes. Page 6

■ Ambra releases low-priced 486 portables. Page 6

■Cisco users face tough upgrade decisions.

Page 8

■Informix rebuilds OnLine database to support multiprocessing. Page 8

■IBM's flip-flop on operating systems puts off developers. Page 12

■Brokerage firms fight fraud with sophisticated surveillance tools. Page 15

■EDS snags \$1.5 billion contract from British tax authority. Page 16

■ Novell will bundle Reach Software's workflow technology with AppWare development kits. Page 20

■ New Legent software offers fresh approach to LAN backup and recov-

ery. Page 24

Wendors skirmish over who has the best means of querying relational databases.

Page 29

■ Information Builders plans sortie into CICS client/ server territory. Page 29

ented shell for DOS. Page 37

#### g relational databases. In the Dec. 6 issue, look for our special section in "The State of Open Systems "03." featuring and

IN THE DEC. 6 ISSUE, LOUR FOR OUR
SPECIAL SECTION BIN "THE STATE OF
OPEN SYSTEMS '93," FEATURING AN
EXCLUSIVE LOOK AT RESULTS FROM
X/OPEN'S LATEST WORLDWIDE SURVEY.

#### CAREERS

Beta testing: the good, bad and the down-

Systems' MVS performance Joseph Vincent

low environmental cost. Page 93 to 109

The Unisys 2200/500 offers high performance/

■ You'll rise faster with command of both old and new development tools. Page 122

#### MARKETPLACE

■Pssst. Want some tips on great utilities? Page 129

#### COMPUTER INDUSTRY DESKTOP COMPUTING

■ AST moves quickly to integrate Tandy manufacturing operations. *Page 137* 

#### COMMENTARY

■IBM has a good shot at a comeback, writes Bill Laberis, but old habits will be hard to break. Page 32

#### **WORKGROUP COMPUTING**■ Digital plans spring rollout of **multiproces**-

sor LAN servers. Page 47

■IBM tries to boost PC DPS 6.1 with object-ori-

#### **ENTERPRISE NETWORKING**

■ Disillusioned by **PC-based E-mail servers**, users are turning to RISC machines. *Page 55* 

#### **LARGE SYSTEMS**

■HP affirms its commitment to the HP 3000. Editorial/Letters to the editor .......Page 32
Page 63

Fiday Stock Ticker

#### 

#### **Executive Briefing**

Walking the edge. Technological brinkmanship has become a less popular pursuit in these austere times, but some companies still say the rewards of early adoption justify the risks. Brokerage firms have invested aggressively in new technologies such as massively parallel processing. Page 1 And companies such as Citicorp Mortgage and Chevron Canada say the competitive edge they get from serving as beta sites makes up for the hassles. Page 111

Messaging difficulties. Companies that are used to mainframebased scheduling packages are often surprised and disappointed when they make a switch to PC-based mail-enabled scheduling packages, which operate on a much slower store-and-forward basis. A couple of new products can help, but some companies are rethinking whether the concept of using E-mail as the foundation for scheduling makes sense. Page 47 The huge volume increases in messaging traffic caused by mail-enabled applications are also causing PC servers to hit the

wall. At BellSouth Telecommunications in Birmingham, Ala., for example, performance erodes substantially with more than a couple of hundred users per server. Page 55

#### The EDI bandwagon is getting

crowded. Lawn and turf products supplier, Toro, has launched a major revamp of its EDI system to provide faster response and better service to retail customers. Page 55 Other companies are going even further and banding together in collaborative EDI networks that include customers, suppliers and competitors. Page 81 At this point, there are so many EDI support groups and organiza-

EDI support groups and organizations that it's hard to figure out where to turn first. Tip: Start by

finding a local user group to collect recommendations. Page 85

Reflections on Comdex: This show is a great place to check the vital signs of the industry and, according to Charles Babcock and Paul Gillin, there were some troubling symptoms on display. Babcock says the event reflected an industry in turmoil, where nothing is quite what it seems. Page 6 Gillin worries that the fantasy isn't just show and that vendors really are oblivious to the real-world concerns of customers. Page 37

Latest victims of computer-driven job obsolescence: Crash car dummies may be out of work soon if General Motors and Los Alamos National Labs go ahead with proposed research on crash simulation. *Page* 68

# A

Salomon's Robert Cassiliano says the brokerage will be down to one mainframe by 1994. See story page 14.

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## Sun makes its Next move

#### Licenses NextStep, makes \$10 million investment

License

requirements

Next will make

NextStep available for

licensing to anyone

able to prove

compliance with a

specification that Next

will make generally

available by the end of

June 1994. Dubbed

OpenStep, the spec

will include the

application

programming

interfaces for NextStep

and portions of the

technology that are not

specific to the Mach

operating system

kernel, such as the

object framework and

user environment now

shipping with

NextStep Release 3.2.

By Melinda-Carol Ballou and James Daly

SunSoft, Inc. and Next Computer, Inc. last week moved to unite their object technologies, throwing down a challenge to Taligent, Inc. and Microsoft Corp., which are developing their own envi-

ronments.

Under the terms of the deal, SunSoft will license Next's NextStep object application environment and incorporate portions of it into Solaris, Sun's Unix derivative, However, Sun officials said they will maintain compatibility with existing Solaris applications.

Also, Sun is investing \$10 million in Next, which will give the Redwood City, Calif., company much-needed cash, analysts said.

Next will license Sun's object and distributed computing technology including Network File System, Sun's Object Management Group (OMG)-compliant object broker and Sun's interface definition language. Next will also port NextStep to the SPARC architecture.

Some industry analysts questioned the impact of Sun's move on the Common Open Software Environment initiative

(COSE). Sun officials intimated that COSE's Common Development Environment would ultimately comply with OpenStep. In order for this to happen, however, Sun must get key COSE members to sign on, which is not a foregone conclusion, analysts said.

The Sun/Next alliance is expected to speed time to market for an objectbased version of Solaris by two or three years, SunSoft officials said. Although the partners did not announce ship dates. SunSoft President Ed Zander claimed they would "off the get ground" with their offering well before the middle of 1995 to coincide with the appearance of both Taligent's and Microsoft's object environments

veloper's version of its Distributed Object Environment that includes low-level object services, an object broker compli-



Next's Steve lobs (left) and Sun's Scott McNealy are objects of each other's desire

ant with the OMG's Common Object Request Broker Architecture and an interface definition language. The addition of NextStep's development environment will enable the Mountain View, Calif., developer to market a complete commercial offering, industry analysts said.

"Developing object-based technology to create applications quickly is not something to be taken lightly - what Next has done is nontrivial. Sun could not

reinvent it," said Rikki Kirzner, an analyst at Dataquest, Inc. in San Jose, Calif.

Some developers looked favorably on the announcement, saying they like NextStep but have been concerned about its longevity and broad appeal, "We've been interested in developing to Next for a while, but there simply wasn't the market to justify it. Now we'll plan to move ahead," said David Knight, vice president of marketing at Isocor Corp.

#### Not quick to sign

Some Sun users reacted favorably but said they are waiting for definitive product announcements before they sign on.

"NextStep is a very powerful objectoriented development environment, and this is welcomed news," said one source in information systems operations at a major Wall Street brokerage house. "But we don't know what the details are, and we'll have to see - they're going to use Objective C. which means additional training for which we'd have to budget."

But some industry analysts questioned SunSoft's strategy of bundling its object environment with Solaris.

There is a fundamental flaw when the user has to choose a particular operating system to adopt the product," said John Rymer, an analyst at Patricia Seybold Office Computing Group in Cambridge. Mass, "Others such as Taligent are packaging their technology so that it targets multiple operating systems and not just one. Some users may look at this and say, 'If I have to choose between NT and Solaris, I'll say thanks but no thanks."

Multimedia

#### Novell to add digitized video to NetWare

By Elisabeth Horwitt

Novell, Inc.'s Multimedia division is expected this week to begin shipping software that will allow Microsoft Corp. Video for Windows users to download live multimedia presentations from a NetWare server. The alternative is to stuff local PC hard drives with digitized video files that take up about 10M bytes per minute, according

to a spokesman for Novell's

Natick, Mass.-based division. Novell Multimedia, formerly Fluent, Inc., will ship Net-Ware Video 1.0, software that turns NetWare into a full-motion audio/visual server for Windows clients, said Paul Armstrong, a product line manager at the firm.

The product does not support videoconferencing since it does not provide a way for audio/visual material to be delivered in real time over an internetwork backbone.

Armstrong said. However, it will enable a NetWare server to store multimedia material in a file and send it to a remote server which can deliver the material in real time to local PCs

NetWare Video can take any file built

using Microsoft's AudioVisual Inter-leaf format and "play it directly to a client" over a LAN, Armstrong said. NetWare Video 1.0 is said to support rates of up to 30 frame/sec., the speed used for television video.

The software can lower the rate of transmission according to traffic loads on the LAN and the frame speeds a client PC can handle, Armstrong said. A 386-based 50-MHz PC can handle 15



frame/sec., while an Intel Corp. Pentium box can handle the upper limit.

However, users are likely to be more concerned about clogging up their server disks than overloading the LAN medium, which is getting faster all the time with Fast Ethernet and FDDI, said Glenn Fund, president of the Boston Area Novell Users Group and network administrator at a large Northeast defense electronics contractor. "Full-motion video takes up a lot of [disk] space; we have enough problems [ensuring server capacity] for regular DOS and Windows applications.

NetWare Video works with the multimedia editing, generating and embedding tools that come with Video for Windows, such as Object Linking and Embedding (OLE) 2.0, Armstrong said. Users can use OLE 2.0 to integrate video clips with an application, such as a spreadsheet, or electronic mail. "So you could send out [an E-mail] notice to your sales force, 'Here's a new product, [a video of] what it looks like and Joe Schmo saying 'Go out and sell it.'

Upcoming versions of NetWare Video will support other client environments. A likely candidate is Apple Computer, Inc.'s Quicktime. At this time there is no equivalent multimedia user interface standard for Unix, Armstrong said.

Video 1.0 will be available in five-, 10and 25-user packages, priced from \$100 to \$200 per seat. The product will run as a NetWare Loadable Module on either NetWare v3.11 or 4.01

#### On the tube

Third parties will tomorrow announce support of NetWare Video, Novell's multimedia service for Windows, including the following:

· Intel, whose Indio software compresses video, digitizes it on hardware and decompresses it in software to be presented on a regular PC. Video 1.0 will support other leading compression formats as well, said Paul Armstrong, product line manager at Novell Multimedia.

· Synoptics Systems, Inc. and other hub vendors will provide links between servers and PCs.

Compaq Computer Corp. will provide a hardware platform for the server.

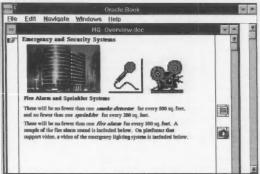
Lotus Development Corp. will provide Notes multimedia support for NetWare Video, enabling users to incorporate multimedia presentations into Notes workgroup transmissions to be routed around the office. - Elisabeth Horwitt

#### Correction

Due to a writing error, an Inside Lines item in the Nov. 22 issue misstated Hewlett-Packard Co.'s computer fiscal 1993 revenue. It is \$15.5 billion.

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#### Windows



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system to a much wider user base than if it had been available for only one of these environments."

Macintosh

Chris Nicholls Manager IS Dev. British Telecom, UK



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ORACLE

# An industry turned topsy-turvy

pple showed the Macintosh running Windows applications, but that was not the only thing that seemed inside out at this year's Comdex.

Sun showed users on SPARC stations how to move data from Windows into a Unix program.

IBM stole m march on Apple and seized the mantle of enhancing the user interface. The company said it will make computers accessible through voice, touch, pen, gestures and probably beseechful prayer, although it neglected to include the latter on its laundry list.

Gallagher, the comedian, showed everybody how to laugh at IBM's expense. That is, straitlaced IBM paid him to make fun of the company. His off-color jokes, he said, were "just another shade of blue."

If the world seemed upside down in Las Vegas, it's just another sign of an industry in deep ferment. Old enemies showed up as allies, while old friends eyed each other suspiciously.

IBM and Apple, for example, showed PowerPC prototypes speeding through applications, lending credibility to the RISC architecture as a competitor to Pentium

Many observers think Intel and Microsoft march in lockstep as they garner the profits of the desktop revolution. Indeed, they were arm in arm Monday as they urged board makers to follow

"plug-and-play" standards at the Sahara Hotel. But MiComdex confirmed what we'd all begun to suspect:
The industry is in deep ferment, and all the old direction markers are gone.

Charles Babcock

crosoft spokesman Carl Stork had hardly left the room before Pentium marketing manager Curt Nichols said, in response to a question, that the portability of Windows NT was not to be taken too seriously. Sure it could run on non-Intel platforms, but Windows NT "is not in the mainstream" like DOS or Windows, so its appearance on other platforms wasn't going to undermine Intel.

Underneath the surface tension, deeper currents were at work. For one thing, there were few open system evangelists in evidence, and there was little need for them. What manufacturers are coming up with today is often more open than their predecessor products. IBM spokesmen, for example, said PowerPCs will be available in mid-1994 to run Windows, ALX, Solaris, Taligent, the version of OS/2 known as Workplace/OS, and Windows NT. New Macintoshes based on the PowerPC will run all existing Mac software and at the same time they will be able to run Windows applications under Insignia Software's emulation program.

Nichols explained to his Sahara listeners that smart people wouldn't want to do that. Running an application in emulation was like reading a French novel and "translating it word-for-word from a French dictionary." But the Windows applications I saw running on a Mac PowerPC looked like they had thrown the dictionary away. They ran at 386, perhaps 486, speed.

In Comdex technical sessions there was a growing awareness of cross-platform development environments, one-time development of an application for multiple graphical user interfaces and gateways to multiple SQL databases. Technology with the portability built in, such as Windows NT and the PowerPC, will automatically swing the door to open systems a little wider.

At the same time, the scramble to be where the growth is has led to slippery alliances and topsy-turvy arrangements. At times, what used to be up was down and what used to be hot was suddenly cool.

When asked about the operating temperatures of future Pentium chips, the redoubtable Mr. Nichols didn't hesitate: "There is no problem with heat dissipation whatsoever. The Pentium processor actually runs cooler than the I486." It runs cooler, that is, if you package it in an Intel-approved manner. Ah, could we have the specs on that fan, Mr. Nichols?

Babcock is Computerworld's technical editor. His MCI Mail address is 575-2737.

#### Digital, Lotus talk groupware pact

By Craig Stedman

Digital Equipment Corp. and Lotus Development Corp. are negotiating an agreement that will have Lotus develop Alpha AXP versions of its Notes groupware software for Digital to resell. The two companies are also looking at integrating Notes with Digital's LinkWorks application framework software.

Howard Dresner, a program director at Gartner Group, Inc., a consulting firm in Stamford, Conn., said the Notes support could give Digital a fulcrum to use in selling both Alpha systems and LinkWorks. Meanwhile, Lotus would get access to the large All-In-1 installed base through Digital's own sales force.

"Lotus really wants to get Digital as m channel" for Notes, Dresner said. He expects an agreement in the first quarter of 1994 and expects Notes for Alpha shipments late next year.

Dilip Phadke, LinkWorks group marketing manager at Digital, confirmed that the companies are in negotiations and said a first-quarter announcement "is possible."

Phadke said Digital and Lotus "are still evaluating what we can deliver in what time frames." He noted that some capabilities for supporting Notes under LinkWorks might be available by next summer

Dresner said he expects Lotus to agree only to "rudimentary" integration of the two products, such as supporting LinkWorks as an alternate repository for Notes objects. "Lotus doesn't want to do anything to screw up its Notes business, nor do they want to play favorites," he said.

Lotus declined to comment.

#### Integrating groupware

While Notes and LinkWorks are both put in the groupware category, Digital is positioning LinkWorks as a tool for integrating various applications across workgroups. "If you really look at the products and their target markets, they're not the same thing," Phadke said.

Conrad Wiser, manager of Martin Marietta Corp.'s data center in King of Prussia, Pa., agreed Notes and LinkWorks are more complementary than competitive. He said an Alpha AXP version of Notes would catch his attention. "We'd look at it right up front, absolutely."

Integrating Notes and LinkWorks would make for an even more interesting product offering, he added. "We're very concerned about [application] integration. That's one of the most difficult things in software development."

#### Ambra to flex notebook muscle

Tastes great, less filling

Ambra's notebooks offer a wide range of performance choices at aggressive price points

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4M bytes

By Stephen P. Klett Jr.

Ambra Computer Corp. today will unveil two low-end notebook lines designed to take on Gateway 2000, Inc., Toshiba American Information Systems, Inc. and — to a degree — parent company IBM.

The Subnotebook (SN) and Notebook (N) series are based on Intel Corp. 1486 microprocessors and cost from \$1,399 to \$3,999. The series have battery lives of two and 2½ hours, respec-

CPU

Hard disk

Expansion

Weight

Color screen

tively, Ambra said, and are slated to ship next week.

Analysts said Ambra's price points and features were in line with Toshiba's recent introductions [CW. Nov. 8], but some were skeptical of its ability to deliver the machines in volume

"On paper, [the notebooks] are very attractive and aggressively priced," said Randal Giusto, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H. "But the problem for Ambra has been supply," he said. "The big question remains of whether they can deliver — in quantity—on the date they say they will."

#### Initial troubles

Ambra's first notebook offering — the NC425 — faced backlog troubles right out of the gate [CW, Aug. 30]. The Raleigh, N.C., company made adjustments to avoid further backlogs, including more optimistic forecasting and signing a

new manufacturer, which Rich Ritzema, product manager at Ambra, declined to name.

Also, by offering passive-matrix versions of the high-end N series, Ambra hopes to avoid backlogs associated with the high demand for active-matrix technology.

Ritzema said Ambra is targeting Gateway and Toshiba, but it could win some IBM customers fed up with waiting for IBM's ThinkPad 500.

While Ambra has a price/performance advantage over Gateway, analysts said Ambra

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may face a tough uphill climb against Toshiba, which they said holds the upper hand because it does most of its own manufucturing while Ambra relies 100% on OEMs.

While users said they were impressed with the products' features, some

were wary about moving to the Ambra brand name.

"The new lines sound good, but they strike me as being the absolute low end for IBM so I probably won't look at them," said William I. Lodge, project manager at The Turner Corp. in New York.

Other users said they may look at the machines.

"Ambra has as much credibility as any other brand and being part of IBM rather than some other third-tier vendor certainly helps them," said Donna O'Driscoll, assistant vice president of corporate information systems at New York Life Insurance Co. in New York.



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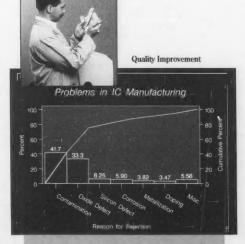
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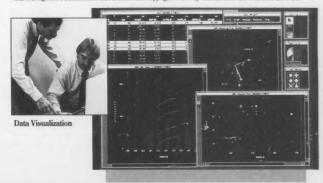
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#### News Shorts

#### NCR unwraps voluntary leave program

Following its announcement last month that it will trim its worldwide work force of 54,000 employees by 12% to 15%, NCR Corp. last week unveiled a voluntary eparation program for 25,000 employees in the U.S. Officials at the Dayton, Ohio, computer arm of AT&T have not yet estimated the charges for the program, which will begin in the first quarter of 1994.

#### Health providers urged to go with X12

A health care industry task force, filling in many of the technodetails missing from the Clinton administration's health care reform legislation, last week called for large insurers, medical groups and employers to implement ANSI X12-based electronic billing and payment networks by the end of 1994. The Workgroup for Electronic Data Interchange said basic X12 standards are in place for electronic medical claims, and it will publish implementation manuals by mid-1994 for doctors, hospitals, payors and electronic data interchange vendors. It remains to be seen whether the industry can meet the aggressive dead-

#### Developer arrested for installing virus

The president of a small New York software developer firm was arrested last week for computer tampering. He allegedly had one of his technicians install a Troian horse computer virus into one of his client's systems to ensure that the customer would pay for overdue licensing fees. Michael Lofaro. 29, president of M.JL Design, and John Puzzo, 22, un MJL technician. were both charged with first-degree computer tampering, a felony charge that carries a maximum sentence of four to seven years' imprisonment.

#### Suit against Apple is thrown out

A California state court has thrown out a wrongfuldismissal lawsuit filed against Apple Computer, Inc. by former Executive Vice President Albert A. Eisenstat. The 63-year-old Eisenstat alleged that he was forced from his post at Apple earlier this year because of age discrimination. The state Superior Court in San Jose, Calif., said a mediator found the allegations unsupported by the facts and dismissed the charges with prejudice," meaning they cannot be refiled. Apple and Eisenstat were unavailable for comment.

#### SynOptics switch gains WAN links

SynOptics Communications, Inc. said it will today announce wide-area interfaces for its LattisCell Asynchronous Transfer Mode (ATM) switch, which began shipping in August. Today a workgroup switch, the LattisCell, will gain direct interfaces to T3 (45M bit/sec.) and Synchronous Optical Network (Sonet) networks, said John Jaeger, product line manager. SynOptics also announced ATM adapter cards for Sun Microsystems, Inc. Shus computers, A fiber card is \$1,795, and an unshielded twisted pair connection will cost less than \$1,300, Jaeger said.

SHORT TAKES Geoff Squire, head of New Business Opportunities at Oracle Corp., stepped down last week, a month after Oracle moved Squire to a less visible position than his former post as chief executive officer of International Operations. . . . Richard Hackborn. Hewlett-Packard Co.'s executive vice president and head of its Computer Products Organization, will retire, effective tomorrow. Richard Belluzzo, who was executive vice president and general manager of the Hardcopy Products Group, will take over but will continue to oversee HP's printer business in addition to Computer Products' PCs and PC LANs

More news shorts, page 16

#### Cisco 9.2 upgrade may cost

By Joanie M. Wexler

■With the next release of Cisco Systems, Inc.'s router software looming on the horizon, the day is quickly approaching when some veteran customers will have to decide whether to invest millions in new router hardware.

Cisco's Release 9.2 is expected to ship early next year bearing key features that allow networks to scale up in size, according to beta customers and others familiar with the 9.2 blueprint. These include faster routing table updates, more sophisticated IP address management capabilities and enhanced tunneling and X.25 encapsulation techniques.

However, 9.2's code size is "so big, it won't run on the bulk of Cisco's installed base." said one 9.2 beta customer, who requested anonymity. The user, who runs a medium-size Cisco network, said he is looking at a \$5 million upgrade in either memory or new routers so he can take advantage of 9.2.

Another 9.2 beta customer said he has not seen this degree of hardware strain, but noted that his test version does not include Enhanced IGRP, the faster version of Cisco's routing table update algorithm expected in 9.2. The user, who also asked not to be identified, did say that Cisco "will eventually run into a problem with the old processors." The hardware platform "seems to have a 2M-byte limit" on the size of the code.

This is an issue "most Cisco users will face in the next 12 months," said Val Sribar, program director at Meta Group, Inc., a consultancy in Stamford, Conn.

Sribar said while the horsepower problem tends to surface across many vendor product lines today because of rapidly changing technology, Cisco's continued sales of its former high-end

AGS+ router after the introduction of its 7000 platform last January [CW, Jan. 18] has continued to widen the migratory

Cisco, however, said it does not plan to force users off of old platforms in favor of the 7000 and other compatible 7000 family members rumored to be in the works at the high end, midrange and low end.

'Most users are positioned to grow," said Senior Vice President John Chambers. Most AGS+ routers sold in the nast 18 months shipped with the required memory upgrade, he explained.

#### Pluses and minuses

The 7000 brought users some of the increased capacity, redundancy and hotswappability features for which they had been clamoring. On the flip side, the new model did not represent a quantum architectural leap in performance, limiting its future-proofing appeal, and introduced a new form factor for interface cards that rendered older routers' cards incompatible with the newer platform.

These changes and the memory factor could open a door to vendors looking to nenetrate Cisco's justalled base of about 125,000 devices, since some users, when faced with expensive upgrades, will be more likely to reevaluate other vendors.

'The fact that it is such a substantial investment to upgrade means we'd stop and take another look at the marketplace," said Greg Hardison, telecommunications supervisor at McDermott, Inc., a Cisco shop in New Orleans.

Ron Cramer, a systems programmer at Cargill, Inc. in Minneapolis, indicated he might not be motivated to upgrade at all because of the expense and the labor involved in changing his widely distributed

"I'd have to be sure of the advantages of the new code first," he said.



While Cisco would not comment last week on the alleged resource-hogging 9.2, industry observers said it will include the following:

#### • Enhanced IGRP. A

faster version of Cisco's proprietary IGRP routing algorithm will minimize delays that would otherwis multiply out of control across expanding networks. Cisco said last May it would support Enhanced IGRP by mid-1994, though observers expect it earlier in the vear with q.2.

. IP mapping, For companies with unique IP addressing schemes, 9,2 will reportedly translate them to standard IP addresses for communicating over wide-area networks with other IP users.

· Enhanced tunneling. Expected to allow the encapsulation of any protocol within IP all the way through a logical network.

#### Informix resets DBMS

By Kim S. Nash

Informix Software, Inc. last week unveiled a rebuilt version of its OnLine database to run on symmetrical multiprocessing machines and, eventually, massively parallel processing (MPP) machines.

As expected, Informix detailed features and re-

lease schedules for multiprocessing support, dubbed Dynamic Scalable Architecture (DSA) ICW, Nov. 151. Sequent Computer Systems, Inc. co-built the DSA with Informix and will be the sole hardware provider of the technology for six months after it ships. DSA will be rolled out in the following phases:

- OnLine 6.0, which ships Dec. 20, will have some parallel functions such as indexing and sorting.
- ▶ OnLine 7.0, due out early next year, is expected to contain full parallel processing support, such as the ability to split and answer user queries across several CPUs. Support for loosely coupled machines is also
- OnLine 8.0, due out in 1995, will take Informix to MPP machines, such as those from Kendall Square Research Corp. or NCR Corp.

A key piece of DSA is built-in on-line backup and recovery in a multiprocessing environment, part of which lets users copy and restore selected parts of a database table, rather than an entire table. That approach could save time for users with multigigabyte databases, said Chris Le Tocq, senior analyst at Computer Intelligence/InfoCorp in Santa Clara, Calif.

Informix claimed that because OnLine 6.0 sports a new 32-bit, multithreaded structure, users will have less trouble migrating to and administering the product than they might with other multiprocessing databases. By contrast, Oracle Corp.'s multiprocessing features are add-ons to a uniprocessor product and rely partly on the multithreaded functions embedded in hardware and Unix and other operating systems.

#### No big change for users

However, such differences should not affect users or database administrators much, analysts said.

Symmetrical multiprocessing machines and MPP platforms are an option for users who want to move several-gigabyte applications off of mainframes. But migrations have been scant, partly because relational database makers could not provide enterprisestrength products for that hardware, analysts said. Now, with announcements from Informix, Sybase, Inc. and Oracle, symmetrical multiprocessing machines and MPP "could be the platform for high-caliber client/server," according to Herb Edelstein, analyst at Euclid Associates in Potomac, Md.

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#### **MAPI**

CONTINUED FROM PAGE 1

faces and have them work across multiple back-end services, including popular LAN and host-based systems. The disadvantage is it limits users to Windowsbased client applications.

"In the long term, a Windows-only messaging solution might work for us, but in the short term, Windows is not that dominant [here]. People outside of our headquarters still have DOS-based ma chines," said Brian Moura, an assistant city manager for the city of San Carlos,

Microsoft plans to wrap MAPI 1.0 into the upcoming Chicago version of Windows and the upcoming Cairo version of Windows NT, according to MAPI product manager Chris Williams. Also, the MAPI kit will allow developers to add the extended MAPI capabilities to current Windows and NT versions

More messaging options

MAPI 1.0 includes object-oriented APIs for front-end clients and back-end services, and a messaging middle layer that includes limited transport, message store and address book functions. Previously, Microsoft made available only a 'simple" set of MAPI client APIs that required developers to use Microsoft Mail for messaging services

Of course, Microsoft will offer MAPI 1.0-compliant front- and back-end products. It will ship an electronic-mail client, code-named Capone, free with Chicago in the second quarter of 1994. Separately and also in the second quarter, it will offer its NT-based Enterprise Messaging server for transport and directory services, Williams said.

However, plenty of other vendors have committed to adapting their products to plug into extended MAPI:

· Isocor Corp. is working closely with Microsoft to provide back-end services that would allow MAPI-based electronic data interchange clients to access global X.400-based networks.

· AT&T and CompuServe, Inc. said their messaging services will natively support MAPI clients.

· A WordPerfect Corp. official said the company plans to enable its Office messaging suite to act as a MAPI service provider.

·Lotus Development Corp. said its upcoming Lotus Communications Server will be a MAPI service provider.

·Beyond, Inc. said it will develop its BeyondMail software as a MAPI client.

Star Enterprise, a Houston-based petroleum refining company and a dedicated Windows shop, uses simple MAPI to distribute database reports using Micro-

'If outside products are already mailenabled using extended MAPI, that's great because it prevents us from having to modify them to do it," said systems analyst Michael Harrison.

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#### Uneven match

Playing Microsoft's extended MAPI against the Lotus-driven Vendor Independent Messaging (VIM) specification is not a comparison of equals, analysts and officials at both companies said.

That is because VIM does not provide a back-end API or service provider interface for linking non-Lotus transport and directory services to VIM clients.

Although VIM is widely used by third-party developers interested in accessing the large CC:Mail and Notes markets, it is not the standard API Lotus intended it to be.

'We told the press we would write to VIM but backed away" because VIM does not offer the service provider interface and because Lotus' VIM support seems somewhat halfhearted, a source at WordPerfect said.

Lotus is making good on earlier promises to support MAPI. It is getting ready to deliver by year's end two pieces of software based on Windows Dynamic Link Libraries that will translate MAPI commands to VIM commands and vice versa, according to a VIM product manager. - Lynda Radosevich

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OS/2 development

## OS shifts draw developers' ire

Recent adjustments to IBM's Personal Software Products group's delivery plans for its Workplace OS variants is causing some OS/2 developers to push back their own development schedules.

At the recent Comdex/Fall '93 show, IBM officials said OS/2 on Intel Corp.based platforms and AIX on RISC-based platforms should enjoy long lives and that Workplace OS would not replace them any time soon.

Conversely, some developers said they thought Workplace OS, a portable version of OS/2 based on IBM's microkernel technology, would play a more strategic role sooner.

The message "tells us we should give it less priority because they can't give us any hard and fast plan to write to," said one long-committed OS/2 developer, who requested anonymity.

'We sense Workplace's functionality is getting pushed out further in the cycle. and that was not our understanding a couple of months ago," said another OS/2 developer. "Maybe they think [Windows] NT is becoming a non-issue and they can hold on with AIX. But that might be a risky strategy.

#### Company line

In response, IBM officials last week said what they have said before: Any and all technical investment in OS/2 and AIX can be carried forward to Workplace OS.

If developers write 32-bit OS/2-compatible applications and gradually integrate technologies from the OpenDoc consortium, such as IBM's Systems Object Model, their migration to Workplace OS should be smooth, a spokesman said.

Personal Software Products wants to get Workplace OS up and running on Intel first to create a stable environment on which to port its RISC-based PowerPCbased systems, which are due by the middle of next year, according to developers familiar with IBM's plans. The latter platform is where they hope to make the most market impact.

While it will be up and running on Intel first, they want to productize on PowerPC first," another developer said.

Personal Software Products is scheduled to hold a two-day briefing for developers this week in Boca Raton, Fla., on a Workplace OS Release 1.0 functional update," according to a letter sent to some developers. The company is also expected to lay out specific plans for what versions it will roll out and when.

IBM officials two weeks ago said they would first deliver Workplace OS with n Unix personality, or look and feel, for the Intel platform; it should enter beta testing either next month or early next year.

Next, IBM will deliver a beta version of Workplace OS with an OS/2 personality for its RISC-based PowerPC-based PCs, probably in the first half of next year.

#### Unix on OS/2

Later in 1994, the company will produce a version with a Unix personality on top of OS/2 for the PowerPC and then a version of OS/2 for Intel systems with an AIX personality layered on top.

Earlier this year, company officials indicated Workplace OS would reside both on servers and clients.

More recently, however, James Cannavino, IBM's senior vice president of strategy and development, said the operating system would likely debut on the upcoming PowerPC-based desktop systems delivered by IBM's Power Personal Systems division. Those systems are due about the middle of next year.

#### IBM pumps client/server

CONTINUED FROM PAGE 1

Although IB'd spokesmen refused to comment on the forthcoming products, details were available from sources close to IBM.

IBM's starter kits will be introduced in the first quarter of next year and will feature hardware and software from IBM and other vendors to handle tasks such as systems management, decision support and distributed databases, according to sources close to the company.

"As customers move to client/ server, they will know that this particular set of products works together, and they won't have to do their own testing from scratch," said one source familiar with the

#### Place to start

About four or five such starter kits are planned; the testing and integration work is being done in a laboratory in Endicott, N.Y., under the auspices of the Client/Server Computing Unit. These kits will then be offered worldwide to IBM's open systems centers, which provide service and support to IBM sales offices, as well as to customers themselves.

The blueprint will break out how IBM will tie together various pieces of client/server technology from multiple vendors based on open standards such as the Open Software Foundation's Distributed Computing Environment (DCE). Consultants who have seen it compare ODCS to a "Chinese menu" approach. For example, any computer that supports DCE can play within the IBM scheme of things.

Within ODCS, IBM will detail what it will support in the areas of systems management, database management and application development, among others. Objects and multimedia standards reportedly play big roles across the lines.

The blueprint is "definitely not IBM-centric," said Peter Schay, n Gartner Group, Inc. vice president who was briefed by IBM. In that way, it is unlike Systems Application Architecture (SAA), which der development for at least two years - because of the negative feedback it received from its failure to fulfill all the promises made in SAA. This time around, sources said, the blueprint will be announced when there are new versions of products - including a package that backs up LANs on a mainframe - that support the blueprint.

Another reason IBM is not making a big deal about ODCS is that architecture is not all that important

in today's world.

"I'm more interested in what's delivered rather than what's talked about in theory," said Tom Loane, vice president at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla. "I get less inspired with strategy because the world is changing so fast."

Nevertheless, ODCS is expected to fill a dual role: to help internal IBM developers know which standards are important to their customers and to help customunderstand where IBM is heading with client/server in

the next three to five years.

"Strategy is important to us because we view the acquisition of technology to be a long-term inestment," said Robert Lukas, assistant vice president at ITT/Hartford in Hartford, Conn.

"Unfortunately," Lukas added, 'you can't always be assured that the strategy is long term."

Getting started

ardware and software such as the "starter kits" coming early next year are only two elements in IBM's plan to attack the client/server market. Rounding out the mix are consulting, other kinds of services and training that the company has provided to its employees, an IBM executive said.

Peter Tarrant, IBM's director of client/server marketing, outlined the company's strategy during a telephone interview with Computerworld last week. He said the company defines client/server as allowing "any end user to get access to any resources they require to do their jobs - anytime, anywhere and in any form." This requires IBM to work with third-party vendors, particularly in the applications arena, to help customers move to client/server.

The company has already provided client/server classes to at least 70% of its customer service representatives as well as to product specialists on the sales force, among others, Tarrant said. In addition, some 50 field service centers - which provide systems integration, network installation, application development and other services to customers for a fee are being staffed up.

In fact, to ensure adequate numbers of people in the right kinds of skill areas, the number of service centers will probably drop by about 10 or so. That is because of the number of people who have left IBM during the past few years, Tarrant said. The company will need to consolidate service centers to make sure there are enough experts in the needed fields

We've changed our skill mix quite a bit," Tarrant said. "We've hired 4,000 people this year" from other vendors, including Hewlett-Packard Co., Digital Equipment Corp. and Andersen Consulting. IBM has also gleaned client/server technical expertise from contracts performed by its Integrated Systems Solutions Corp. outsourcing subsidiary. For example, he said, its outsourcing deal with McDonnell Douglas Corp. "provided a lot of DEC skills, and those people now work for us. We can put them on an engagement helping other people somewhere.'

Tarrant claimed that at least 80% of the work these field service centers are doing involves client/server to some degree. —  $Johanna\,Ambrosio$ 

#### Big Blue print

Standards that IM will support in its open blueprint include:

- \* Message Queue Interface.
- Common Open Software Environment.
- The Open Software Foundation's DCE and Distributed Management Environment
- X/Open portability guides and database architecture.
- Transaction processing environments ranging from IBM's CICS to Transacc's
- The Object Management Group's Corba as well as IBM's Distributed Systems Object

IBM unveiled in 1987 as a means of tying together its disparate prod-

"This does not smell, feel or look like SAA," said Frank Dzubeck. president of Communications Network Architects, Inc. in Washington. "IBM got its head screwed on right this time.

IBM is downplaying ODCS - un-



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and what doesn't. Hear what he has to say in a remarkably candid recorded conversation. For your copy of "Client/Server And The New Organization," call 1-800-SYBASE-1.

## Wall Street consolidates its assets

By Thomas Hoffman

At the same time as Wall Street is investing hundreds of millions of dollars in its technical infrastructure and making way for new architectures, it has been raking in similar amounts of savings by consolidating data centers and reducing head counts.

A drastic approach at Merrill Lynch & Co. has resulted in a savings of \$100 million — 30% of which was realized by cutting 900 positions — over the course of a justcompleted five-year data center consolidation project.

Rival Salomon Brothers, Inc. has been consolidating its big iron in a shift away from host-based processing as part of its move to Unix-based distributed computing. This five-year effort has so far saved "tens of millions of dollars," but it has cost only 9% of the information systems work force its jobs. That is because Salomon retrained most of its employees in Unix.

#### Reduced by half

Since 1988, the brokerage has consolidated four IBM mainframes into the two that are situated at its

Rutherford, N.J., data center, according to Robert J. Cassiliano, senior operating officer responsible for management of the facility.

In the past two years, Salomon has phased out 33 Prime Computer, Inc. minicomputers once used in its London, Tokyo and New York offices for presales modeling and analytics. In addition, two IBM 3090 mainframes and n slew of IBM 4381s used for analysis and processing were scrapped and replaced by more cost-effective Unix workstations.



Salomon Brothers' Robert Cassiliano: 'The people we have are our biggest strength'

Further plans call for phasing out un IBM 3090 600E by year's end and reducing the capacity on its remaining ES/9000 942 machine

from 225 MIPS to 165 MIPS by 1996. That effort will be assisted by off-loading front-end development and processing onto Sun Microsystems, Inc. workstations using PC and Windowsbased tools.

These efforts have enabled Salomon to cut its mainframe support staff by 115, or about 9% of its 1,300 IS staffers worldwide. So far, 95% of the remaining IS staff has trained on Unix.

#### People power

"We don't want people leaving because they're not trained on the technology. The people we have are our biggest strength," Cassiliano said.

At Merrill Lynch, data center consolidations have gained fame as the "red dot program." The tag comes from Merrill Lynch Chairman Daniel P. Tully's penchant for placing n red dot on, and ordering the removal of, any piece of equipment that cannot be cost-justified.

Merrill Lynch has consolidated from 14 to two data centers in the past five years, a move completed last April.

However, in the past three years, Merrill Lynch has increased its MIPS capacity by 100%, from 725 MIPS to 1,450 MIPS, according to Howard P. Sorgen, Merrill Lynch's senior vice president and managing director of global information services.

"At one point, we thought maybe we could outsource all of our data centers to IBM. Well, they came back and said they couldn't do it any better than how we're doing it," said Edward Goldberg, executive vice president.

#### **Hot commodity**

Among the early adopters of Unix, brokerages say they have benefited from a greater availability of vertical applications, greater system modularity and the

modularity and the ability to downsize. At Salomon Brothers, a foray into Unix has enabled the company to retire more than 35 pieces of big iron — including two IBM mainframes, 33 Prime minicomputers and a handful of IBM 4381s, while adding in more than 3,000 Unix workstations. Salomon spent \$250

million developing a two-story, 1,000-seat Unix trading environment that is Sun-based, said Robert J. Cassiliano, senior operating officer responsible for Salomon's Rutherford,

N.J., data center.

#### **Brokerages**

CONTINUED FROM PAGE 1

and telecommunications at Merrill Lynch, for example, recentralized portions of that company's information systems division to regain cost controls on departmen-

tal information technology projects. "I know every dime that's spent in this firm," he said.

"If you want to get a feel for what the pulse of technology is, financial services is where it's at," Grant said.

Take supercomputing. Where else might one find a company that already has three MPP machines installed and is about to take delivery of a fourth? Prudential Securities, Inc. has two 32-processor Intel Corp. 1860 machines it uses for mortgage securities, portfolio management and risk management evaluations, as well as an Intel Paragon MPP system deployed to conduct quantitative analyses of mortgage securities. In December it will receive an IBM SP/1 ma

chine to determine arbitrage opportunities for its customers, according to David Audley, director of financial strategies at Prudential.

The MPP machines "allow Prudential to keep up with rapidly changing market conditions while constantly updating complex securities portfolios that they couldn't otherwise do with mainframes," noted David Frankel, director of technology at The Smaby Group, Inc., a Minneapolis-based high-performance computing market research firm.

Although several brokerages, including Morgan Stanley & Co., are still running 4- or 5-year-old Y-MP supercomputers from Cray Research, Inc. to perform indepth market analyses, other firms such as Fidelity In-

vestments, Inc. are reaping cheaper costs-per-GFLOPS by shifting to MPP machines such as Thinking Machines Corp.'s Connection Machines, NCR Corp.'s 3600 and Teradata Corp.'s DBC/1012 systems, according to Derek Stubbs, a consultant at Advanced Forecasting Technologies, Inc. in Vicksburg, Mich.

That kind of benefit had Fidelity plunking down \$3.9 million earlier this month to upgrade and expand its

NCR Teradata DBC/1012 MPP-based decision-support systems.

Because the biggest bucks on Wall Street these days are being made in several emerging markets, including derivatives, portfolio management and risk management, it makes sense that derivatives leaders are among the most avid technology consumers.

For example, Goldman, Sachs & Co., among others, is revolutionizing its trading operations by creating "middle-office" operations. These are functional environments that integrate distributed Unix-based client/server trading floors with mainframe-based back-office opera-

with maintrame-based back-office operations. This is done using object-oriented programming tools such as Powersoft Corp.'s PowerBuilder, according to Deborah Williams, an analyst at The Tower Group, a Wellesley, Mass., financial services information technology consultancy.

"The ability to run arbitrage schemes and come up with new derivatives products has been almost wholly dependent on a firm's use of technology," Williams said. But not all advanced technology projects have been

successful.

Merrill Lynch's Howard

with IBM about ATM

P. Sorgen: Talking

For example, First Boston Corp. spent \$200 million on a failed back-office restructuring project based on object-oriented programming, called Newark 2000, in the late 1980s. "It's an example of a company that tried

to redo its whole back-office system and bit off more than they could chew," Williams said.

But the First Boston project was not a total flop. In 1990, the brokerage spun off the object-oriented group into Cary, N.C.-based Seer Technologies, Inc., which is now a \$35 million software developer.

Brokerages have also led the way in deployment of Unix-based systems (see story above) and in the production use of neural networks and artificial intelligence tools to analyze and forecast derivatives and future prices of stocks, bonds and securities.

#### Already on board

On the distributed front, most brokerages, including Prudential, Fidelity and Merrill Lynch, are well-entrenched in Unix-based client/server environments. The bulk of these systems are Sun Microsystems, Inc.-based and are used in mutual funds forecasting, according to Stubbs.

Merrill Lynch, at least, is looking at Asynchronous Transfer Mode (ATM). Howard P. Sorgen, senior vice president and managing director of Merrill Lynch's global information services, said the firm has been talking with IBM about its ATM fast-packet switching technology plans. Although Merrill Lynch has not committed to any vendors, Sorgen said Cabletron Systems, Inc. and Cisco Systems, Inc. will be the brokerage's respective hub and router partners of choice when the company moves to ATM by mid-1994.

Though Wall Street brokerages are expanding most of the advanced technology frontier, the use of analytical tools is not restricted to lower Manhattan. Some of the hottest action is occurring in Japan.

Yamaichi Securities Co. in Tokyo has been using fuzzy logic technologies to model the U.S. economy and forecast the direction of interest rates here to determine investment decisions in specific vertical markets, according to Stubbs.

#### Brokers fight fraud with IT detectives

By Thomas Hoffman

The use and abuse of technology by power brokers seeking to line their pockets with money obtained through illegal transactions is the underside of Wall Street's love affair with technology.

Perhaps fighting fire with fire, firms such as Prudential Securities, Inc. and Salomon Brothers, Inc., both of which have been rocked by securities scandals, have tried using information technology to help brokerages detect incidences of unusual trading activity.

There are no guarantees, however. Salomon, which has been using its security tools for 10 years, apparently was unable to thwart overbidding on treasury auctions by a few traders in the midto late '80s.

In Prudential's case, the brokerage was nailed for practices that occurred in the 1980s prior to putting security measures in place.

Without admitting or denying any wrongdoing, Prudential Securities last



CIO Bill Anderson saus Prudential is monitoring trade activity

month shelled out more than \$330 million to settle charges that it improperly sold more than \$7 billion in limited partnerships in the 1980s.

#### Time to atone

For the past three years, a seemingly chastened Prudential Securities has been using programs written in Cobol CICS on its IBM mainframes. They are used to monitor trade activity among its stockbrokers, according to Bill Anderson. Prudential Securities' executive vice president and chief information offi-

One of the systems, called Shortstop, conducts on-line, real-time checks of trading activities before the trades are executed based on predefined authorization limits per stockbroker.

A system called Backstop was designed to identify futures (commodities) activity that exceeds predefined dollar authorizations. Exceptions from both systems go to regional and branch management for review and/or approval, as well as to the home office margin department, which helps ensure the effectiveness of the process

#### **Regulatory requirements**

Brokers who buy and trade stocks on the New York Stock Exchange and other exchanges are required by Securities and Exchange Commission regulations to have Series 7 licenses. The registrations for those licenses are kept on-line at Prudential Securities, Anderson said. But because Shortstop and Backstop are used by Prudential Securities and not

Prudential Insurance, they were not able to detect unlicensed trading by Prudential insurance agents.

For the past decade, Salomon's surveillance departments have been using a mix of Windows-based PC and Unixbased software, written in-house, to identify trading activity that would call for additional scrutiny based on a variety of parameters. For example, the firm is using the software to identify trading between counterparties and short-term trading, two indicators of trading that call for additional scrutiny, according to Frederick M. Krieger, chief compliance counsel at the \$15.37 billion brokerage

Although Krieger could not quantify the extent to which the systems have eliminated fraud, he said the increasing sophistication of the systems has enabled a more effective use of time by compliance and supervisory personnel.

Although Salomon, Prudential Securities and other brokerages regularly use in-house software tools to monitor their risk management and portfolio management trading operations to reduce and eliminate fraudulent dealings, the surveillance technologies our often be circumvented by wily brokers.



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#### News Shorts

#### CompuAdd CEO resigns

CompuAdd Computer Corp. said Bill H. Hayden is stepping down as chief executive officer of the Austin. Texas-based mail order company, which recently emerged from Chapter 11 bankruptcy protection. Richard W. Krause, CompuAdd's president and chief operating officer, will take on the duties of CEO until a successor is named. Hayden's departure comes on the heels of Compu Add's announcement that it has begun preliminary merger talks with Zeos International, Inc. [CW, Nov. 8]. Hayden will reportedly turn his attention to running his point-of-sale software company, CompuAdd Information Services.

#### DOD selects development contractor

The U.S. Department of Defense last week awarded its Integrated Computer-Aided Software Engineering (ICASE) contract to Lockheed Missiles and Space Co. in Sunnyvale, Calif. The 10-year, \$400 million contract, which includes subcontracts to IBM, Hewlett-Packard Co. and others, will provide CASE tools throughout DOD for the development of Ada applications. The tools will be integrated with Pentagon repositories of reusable software components. ICASE is a cornerstone of DOD's Corporate Information Management initiative, a program aimed at cutting information systems costs while boosting IS effectiveness.

#### Morgan Stanley names new CIO

Kevin Parker, who most recently headed Morgan Stanley & Co.'s Tokyo-based international equity derivatives trading group, was recently named managing director and chief information officer at the New York-based brokerage. Parker's charter includes the restructuring of Morgan Stanley's front- and back-office environments. Parker replaces managing director Gary Goehrke, who is now in charge of the comptroller's office. Parker reports to Carter McClelland, the firm's head of administration and operations.

#### CA, American Fundware settle

Following a September Federal Court award of \$8.5 million to Computer Associates International, Inc. for American Fundware, Inc.'s misappropriation of CA trade secrets in the late 1970s and early 1980s, the two firms last week announced a resolution of the dispute. Under the agreement, American Fundware will pay CA an undisclosed amount of cash plus a royalty on all its revenue over the next 10 years. Meanwhile, CA will continue to license technology to American Fundware for use in its PC Fund and Fundware PCbased fund accounting programs.

#### Apple, Fujitsu to do multimedia packs

Apple Computer, Inc. and Fujitsu Ltd. have agreed to develop compatible software for their respective multimedia platforms in Japan. Under the agreement, Apple will license QuickTime to Fujitsu, and the two firms will develop a set of common software development guidelines that will enable independent software vendors to develop multimedia applications that will run on both Fujitsu and Macintosh computers.

SHORT TAKES Oracle Corp. and Novell, Inc. said the first of several expected Oracle database and Novell operating system bundles will be in user hands by Dec. 18... Computer Associates and Symbol Technologies, Inc. have introduced ScanPac, which combines two new modules of CA's AccPac Plus Accounting software with Symbol's LaserTouch bar code scanners.... Digital Equipment Corp.'s PC business unit has signed a distribution agreement with a Chinese computer company and is exploring setting up a PC manufacturing plant in China.

### UK tax agency will outsource to EDS

By Mark Halper

Electronic Data Systems Corp. and Inland Revenue, the UK's tax service, said last week they expect to sign by April a 10-year outsourcing deal, worth up to \$2 billion, for EDS' EDS-Scicon Ltd. subsidiary to take over information technology services. But before it can close the deal, EDS must first face questions regarding data confidentiality and labor.

The announcement comes one week after Computer Sciences Corp. beat out EDS for a tentative \$1.35 billion deal with British Aerospace PLC [CW, Nov. 22]. Computer Sciences also bid for the tax job.

EDS plans to invest \$105 million to purchase information technology equipment from Inland and to hire 2,000 of its 2,500 information technology workers. About 300 workers would stay with Inland. Inland's information technology budget is estimated at \$375 million.

The two parties said they expect to complete the deal in stages. They were unspecific about the technology changes EDS would implement or whether EDS would use its own processing centers

A civil servant union at Inland has voiced its objection to the pact and is lobbying members of Parliament and major British companies to intervene, contending that the arrangement undermines the confidentiality of mountains of financial and personal data that companies and individuals provide.

#### Union distrust

'We believe there's an increased risk to confidentiality," said Bill Hawkes, assistant secretary of the Inland Revenue Staff Federation, which represents most of the 2,500 information technology workers at Inland.

Inland stated last week that it and the British government "attach the greatest importance to safeguarding the privacy" of taxpayer information. An Inland spokeswoman said Inland would retain ultimate responsibility for confidentiality and would use "legal sanctions" to punish any leaks.

An EDS spokesman responded

that EDS customarily safeguards 'very confidential, proprietary information."

The union was scheduled to meet with EDS last Friday, after press time. Its first demand was for EDS to recognize the union as the representative of the information technology workers, Hawkes

"They've avoided being unionized up until [recently]," said Merrill Lynch analyst Steve McClellan.

Hawke said one positive sign is that EDS recognized the union in a recent deal with the UK's Drivers and Vehicle Licensing Agency.

The EDS spokesman said EDS has no union workers in the U.S., but it operates differently in Europe, where "there are different regulations and different laws" regarding workers' rights.

Furman Selz, Inc. analyst Terry Quinn questioned how profitable the outsourcing deal might be for EDS once it meets various union demands. Government sector jobs are less profitable than private sector jobs, even without union issues, he noted.

#### Nintendo

CONTINUED FROM PAGE 1

would have to spend implementing its own system, Rogers said.

Some 11 retail chains and three licensees have signed up to process orders and invoices in the next year through the Unisys system, executives at Nintendo and Unisys said. The EDI network ties into an electronic-mail network provided by General Electric Information Services (see chart). "Several thousand" orders have already been processed through it, Rogers said.

Rogers said nondisclosure terms prohibit him from identifying participating retailers and licensees. One source said Kmart Corp. and Woolworth Corp. have signed on. About 30 licensees are expected to sign on.

A Kmart spokeswoman said she could not confirm or deny participation. Phone calls to Woolworth were not returned. Jim Mattecheck, a district manager at Unisys, confirmed that 11 retailers are using the system.

About two-thirds of all Nintendo-made games, including its Jurassic Park title, were designed by licensees, who are responsible for distributing their products. Many of these companies are small outfits that cannot afford the investment to install and support EDI connections among them, retailers and Nintendo, Rogers claimed.

Rogers estimated that if licensees were to set up a comparable EDI system on their own, it could cost them between \$20,000 and \$500,000 each. While some have rudimentary EDI systems, the Unisys project provides considerable administration, such as credit and location checks, that action of hundreds of thousands of cartridges on a yearly basis."

Ken Jones, director of inventory management at Toys R Us, Inc. in Paramus, N.J., observed that "a hefty percentage" of Nintendo licensees are not tied to Toys R Us through EDI and could benefit from the program. "Without [EDI],

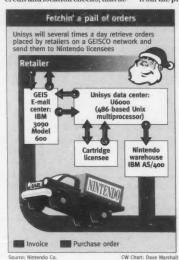
the product is definitely slowed down in terms of how fast it goes out to the sales floor," Jones said.

Nintendo is charging each licensee a fee for each cartridge it sells using the EDI system for ordering invoicing. Nintendo in turn pays a per-cartridge fee to Unisys. The arrangement marks the latest twist in the move toward tying the price of outsourcing deals to business results [CW, June 21]. Rogers declined to name the fee amounts.

Charlie McMurtry. a strategy manager at Wal-Mart Stores.

Inc. in Bentonville, Ark., said he was skeptical about the program, noting that Wal-Mart already uses EDI links with Nintendo licensees.

But Rogers said Fast EDI would provide more elaborate support than what retailers now receive.



companies any transaction.

"What Unisys came up with was a design that lets the licensee have a sophisticated hookup to retailers without spending a large investment up front." he said. "It's designed to facilitate the distribu-

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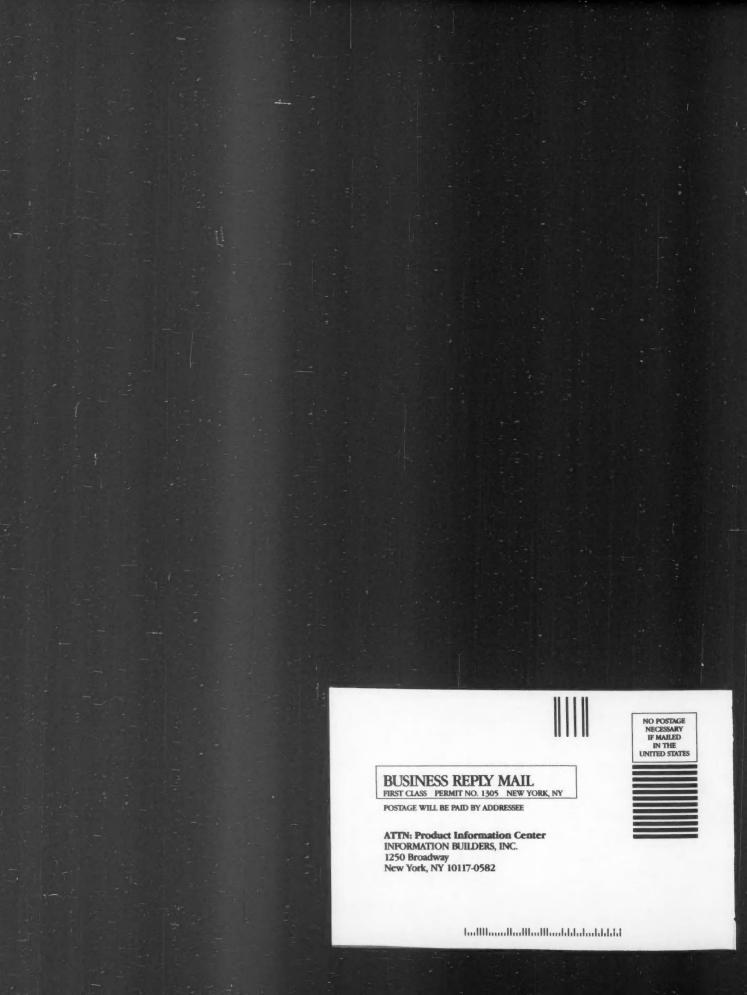
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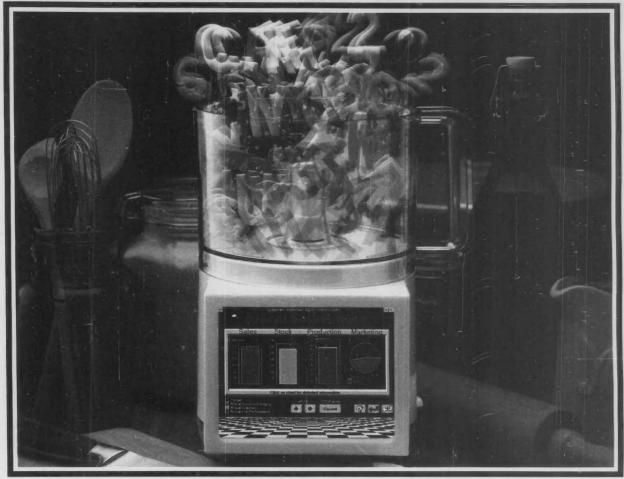


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#### Novell reaches for work-flow boost

By Michael Vizard

Novell, Inc. last week said it has signed a deal to bundle work-flow technology from Reach Software Corp. in Sunnyvale, Calif., with its AppWare development kits

AppWare, which is scheduled to be available next year, is Novell's develop-

ment platform for creating NetWare applications that will run on multiple platforms. By adding work-flow support to the kit, Novell is preparing for the next generation of network applications.

"A year from now there won't be an application that doesn't have work flow built in," said Brownell Chalstrom, president of Chalstrom Consulting in Alameda, Calif. "Novell is one of the first companies to recognize this and put work flow in its standard application development platform."

However, information systems directors should be cautious because Novell is still evolving its work-flow strategy for NetWare. "AppWare and NetWare aren't necessarily using the same work-flow

strategy," said Bruce Silver, an industry analyst at BIS Strategic Decisions in Norwell, Mass.

In fact, Novell is still determining whether it will compete or cooperate with Lotus Development Corp.'s Notes, which will be available as a NetWare Loadable Module in the first quarter. Lotus will position Notes as a work-flow application development platform at its LotusSphere conference next week.

Action Technologies, Inc. in Sunnyvale, Calif., will announce at Lotus-Sphere that it is shipping its work-flow offering for Notes. Reach last week announced its intention to ship its Work-Man for Notes offering late in the first quarter of 1994. ViewStar Corp. in Emeryville, Calif., is also working to bring work-flow tools to Notes in 1994.

#### A dubious advantage

Industry analysts said Lotus has an edge in the work-flow arena because Notes supports synchronized replication of databases, which allows users to more easily share updates of documents. But many customers may opt for lower-end work-flow solutions. These would only incorporate AppWare applications that support Reach's technology running in conjunction with an SQL database.

For example, Pacific Gas & Electric Co. (PG&E) in San Francisco is looking to adopt Reach technology running on top of Notes, SQL databases, various electronic-mail systems and Banyan Systems. Inc.'s Vines.

PG&E has not decided if it will use Reach on top of Notes or on E-mail. "Work flow tends to make more sense with a document-oriented database like Notes, but then you have to factor in the additional cost of Notes for someone who doesn't have it already," said Alex Jauch, a team leader at PG&E.

However, because Reach is supporting multiple back-end systems, Jauch said PG&E will start going forward on workflow application development. "We'd like to have a trouble-ticketing system that could automatically punch something up to a higher priority." Jauch said.

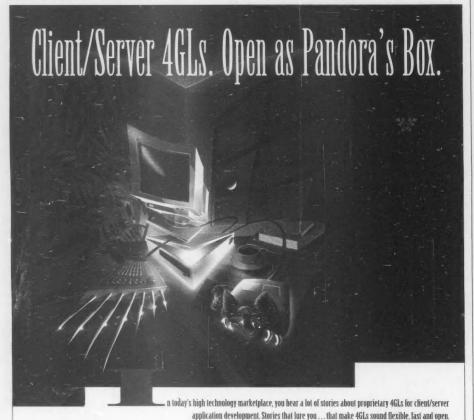
For its part, Lotus is hoping its alliances can shore up its work-flow presence before Novell and other rivals such as Microsoft Corp. can implement their strategies.

"There's a huge pent-up demand for work flow because Lotus has been out creating demand for Notes as a workflow platform." Chalstrom said. "But Notes by itself is not a very good workflow platform."

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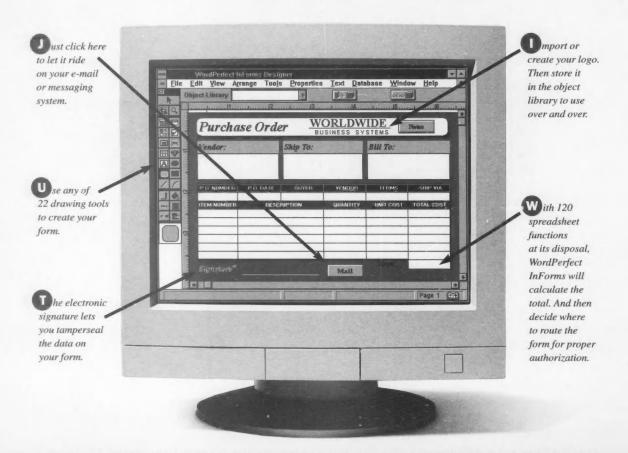
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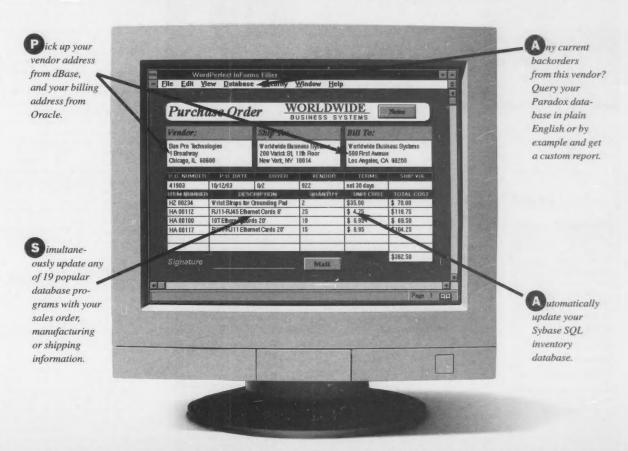
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INFORMS

#### Legent rolls out LAN-based backup tool

By Gary H. Anthes

Legent Corp. last week introduced data backup and recovery software that creates local disk files for fast recovery and sends backups to a mainframe for tapebased archiving and disaster recovery.

Enterprise Storage Manager (ESM) is also able to recognize duplicate files

coming from multiple desktops or servers so that only one copy is retained, reducing storage requirements and network traffic, according to the Herndon, Va., company.

"The fundamental idea of backing up to another LAN server and sending disaster recovery [backup] to a mainframe is a great idea, and it's unique," said Glen McDermed, an analyst at Gartner Group, Inc. in Stamford, Conn. "You get high performance and the security of the mainframe backup facilities."

#### Replaces tapes

Star Enterprises, a \$7 billion partnership between Texaco, Inc. and Saudi Refining, Inc., is installing ESM at its Houston headquarters and will roll it out to sites with thousands of workstations and servers. It will replace the current practice of doing full server backups each night using 4mm and 8mm tapes and PC-based backup tools, said Tom Bernhardt, technology analyst.

Bernhardt said that will allow Star to piggyback onto the existing disaster recovery program that is in place for Texaco's mainframes, which Star uses. The ability of ESM to do incremental backups, avoid duplicate backups and compress data will reduce storage and transmission costs, he said.

Existing PC backup schemes are not robust enough, Bernhardt said. For example, Star lost data a year ago when a server failed and the company discovered that the backup software destroyed data after backing up 64,000 files, he explained.

Other users may be even more at risk, according to Legent. "Over 85% of all LAN servers are not backed up," said Phil Carrai, vice president of the company's resource management unit.

ESM uses binary object technology, for which Legent is seeking a patent, to eliminate duplicate data at three levels—server, site and enterprise. For example, if thousands of copies of new PC software are sent from a mainframe to departmental servers and from there to desktops, ESM will recognize that it is getting the same data multiple times when individual end users run their incremental backups the next day. Only one copy will be saved.

#### Worthwhile, but complex

McDermed called ESM a "high-risk, highreward solution." He said the complexity of the product would require users to take great care when reconfiguring LANs. "This is something you get into gradually," he said. "Gain some experience with it before making an all-out commitment."

ESM comes with a programmable Automated Systems Operations feature that lets users automate their backup and disk-space practices, policies and priorities.

The software will initially support OS/2, with plans to add support for Novell, Inc.'s NetWare and Microsoft Corp.'s Windows NT in 1994. Legent said it is considering a Unix version.

ESM will be available on a limited basis in December and will be generally available in April. Pricing starts at \$30,000, depending on the number of LANs and the amount of storage.



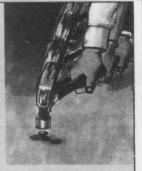
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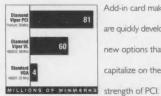
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## Software vendors converge on database market

IS managers to referee end-user query tool battle royale

Big \$\$ market

According to Gartner

Group, Inc., the

business information

systems arena is a

\$600 million market

encompassing

decision-support

systems, executive

information systems

and data access tools.

By Michael Vizard and Kim S. Nash

It looks like information systems managers are going to have to arbitrate a showdown brewing between the PC software and relational database camps over who can provide the best tools for querying relational

On one side, relational database makers such as Oracle Corp. and Sybase, Inc., historically weak on PC platforms, plan to enhance their end-user ad hoc query tools with more graphical interfaces over the next several

On the other side, PC powerhouses such as Microsoft Corp. and Lotus Development Corp. have already stepped up efforts to provide relational links to their PC applications through the addition of SQL links

Smack in the middle is a slew of small to medium-size query tools companies that have already carved out niches to provide these tools. But as the market ma-

tures, many of the functions previously associated with many of these tools are being incorporated into PC applications such as spreadsheets and databases.

As client/server technology matures, the number of enduser query tools is proliferating, noted Peter Kastner, a vice president at Aberdeen Group in Boston. "As a result, IS is starting to put more controls on in order to limit the number of products they have to support," he said.

There is a fair amount of convergence in the market, and it's a complete free-for-all. Some people are not going to make it," added Brent Williams, an analyst at International Data Corp.

With that in mind, many suppliers of ad hoc query tools seeking to insulate themselves from larger competitors such as Lotus and Oracle are trying to reposition themselves. For example, IRI Software in Waltham, Mass., which once specialized in executive information systems, now portrays itself as a marketer of a proprietary multidimensional database designed specifically to run ad hoc queries on data that has been imported from an SQL database. Other companies taking similar

approaches with multidimensional database engines include Comshare. Inc., Pilot Executive Software, Kenan Technologies, Inc. and Arbor Software Corn.

#### But does it have what it takes?

IRI Software President Jeffrey Stamen claims IS managers will discover that PC software applications do not have the level of sophisticated drilldown analysis capabilities that power users require, and that SQL database providers are focused primarily on transaction processing and structured data rather than on end users.

In addition to providing a platform dedicated to handling ad hoc queries. multidimensional databases will improve SQL database performance by offloading ad hoc queries from those databases. Stamen noted.

But other suppliers of end-user query tools maintain that there is no need to support a separate database en-

gine for ad hoc queries. For example, SAS Institute, Inc., Business Insight, Inc. and Business Objects, Inc. have opted for an approach that uses their decision-support software to preprocess data in the SQL database engine itself before sending it to a client system, as opposed to requiring users to adopt another database engine to support ad hoc queries

In the short term, however, PC software providers may have an edge over the makers of end-user query products and SQL databases because they have incorporated much of the functionality of a low-end query tool into widely used Windows applications that users are familiar with

"The products that come from the database vendors

rarely have all the features that end users want." said Howard Dressner, an industry analyst at Gartner Group, Inc. in Stamford, Conn. "They tend to be based on technical issues rather than providing intuitive tools

For example, the Health Care District, which manages hospitals for Palm Beach County, Fla., deployed a

client/server application based on tools and databases from Informix Software, Inc. in Menlo Park, Calif. But Lloyd Chesney, who served as special coordinator for the project, said doctors rejected the user interface provided by the query tools from Informix. As a result, Chesney is now deploying Paradox for Windows from Borland International, Inc., as a front-end query tool to the Informix database

And PC software vendors are promising to extend that base by adding more sophisticated analysis capabilities to their applications using intelligent agents and object technology.

But database vendors are working to plug this gap in their lineup. Sybase, for example, plans to add II Windows-based tool next year as part of its BuildMomentum development tool kit as a companion to Sybase's Unix query tool, Data

Workbench, a spokeswoman said, Oracle, too, has graphical enhancements afoot for several tools in its Cooperative Development Environment line

The database vendor focus for these tools has a lot of merit because IS needs to keep control of the implementation, as opposed to letting individual departments go out and buy all their own query tools," Kastner

However, Williams noted that the database vendors have been late to market with graphical tools. "In some cases, database vendors will have an advantage because they have a direct sales force, but they've also been displaced in a lot of accounts already by PC vendors," he explained.

**Shipping soon** 

The DRDA DB/2 Server

and Gateway for

EDA/SQL will ship

during the second

quarter of 1994 and will

range in price from

\$15,000 to \$25,000.

Also required is the

generic EDA/SQL

environment, which

starts at \$8,000. The

price for the EDA/SQL

CICS/ESA and IMS/ESA

ranges from \$28,500

to \$48,900. The

product will ship next

month.

#### SENIOR MANAGEMENT **PROVIDERS** OF QUERY TOOLS EXECUTIVE LOOK TO SYSTEMS EXPAND THEIR BASE, INDUSTRY ANALYSTS SUPPORT EXPECT A CONSOLI-DATION OF THESE THREE MARKETS INTO A SINGLE **OPERATIONAL** SEGMENT

#### **Information Builders** to broaden EDA/SQI

By Melinda-Carol Ballou

Information Builders, Inc. will introduce a range of products next month that it said will extend the reach of its EDA/SQL middleware into the CICS client/server

The New York software developer is expected to reveal the following:

· Software that will enable users to implement transactions from any supported EDA client — Windows-based PCs or Unix workstations, for example against either CICS/ESA or IMS databases on an MVS/ESA mainframe

·A client/server engine for CICS/ESA that will let any EDA-enabled tool access and update data under the control of the CICS applications, according to Informa-

tion Builders officials. Previously, the company only offered client read-only access to CICS for EDA/SQL.

·A DB/2 server and gateway for IBM's Distributed Relational Database Architecture (DRDA) that will allow DRDA users to access both relational and nonrelational data on the range of platforms supported by EDA/SQL, Information Builders officials said.

·Products developed jointly with Lotus Development Corp. and Dun & Bradstreet Software that will enable those companies' users to access corporate data available on the 35 platforms and more than 50 databases that EDA/SQL

While earlier versions of EDA/SQL have been criticized for lackluster performance, the new Information Builders products use a rewritten version that addresses those issues, according to company officials and some industry analysts. Dubbed EDA/SQL 3.0, the new

release will be generally available by mid-1994, officials said.

The EDA/SQL transaction server, which will debut at Database World in Chicago next week, will allow users to integrate desktop tools such as Powersoft Corp.'s Power-Builder with CICS or IMS to create applications for the client platforms supported by EDA. The server uses a VTAM-based engine to invoke a CICS or IMS transaction program called from the EDA/SQL client.

Current EDA/SQL users with multiple CICS applications spoke about the potential of the transaction server.

'We have a lot of APIs to

proprietary systems that have CICS interfaces," said Mike Onders, associate vice president of applications engineering at the information services division of the Society Management Co. in Cleve-

land, "The EDA Itransaction server] would open up a few more doors to get access to [and manage] that

#### Adding support

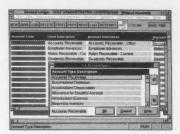
D&B Software, meanwhile, is adding EDA/SQL support to its Advanced Manufacturing Applications Product Suite in SmartStream, its client/server application scheme

Information Builders also plans to announce that it has developed, with Lotus and third-party vendor Bond Technologies, Inc., software that will bring data residing on EDA clients into Notes documents

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#### THINK or swim

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I'm talking, of course, about IBM. Actually, this is IBM talking about IBM, and to that extent the message is not much different from what we've heard from the company for several years.

Years? Sure. Look under the covers of the latest pronouncements of resurgence and you'll see the familjar "customer-driven" moniker. That was what drove the company's image campaign in 1987, its self-proclaimed "Year of the Customer."

So what is new and improved, if anything?

There are several new and different factors that are conspiring to give IBM a real shot at a comeback. Make no mistake about it, this is a company that has a long way to travel before it is healthy and viable again, no matter how loudly company officials might crow about IBM's "great underlying strengths.

Most significantly, under the direction of Jim Cannavino as chief strategist, IBM will continue to map a bottom's-up strategy emphasizing the desktop. This is no small change, as clearly the large systems powers have continued to lead and mislead the company, even during the long demise of the last three years.

The prospects are excellent in hardware and software. As a key element in the client/

server world, OS/2 is gathering steam as Windows NT takes shape more slowly than most would have thought. Our own survey of top corporate customers showed only a quarter of the 238 companies we questioned had even tested NT. (Although those that did generally liked it more than OS/2.)

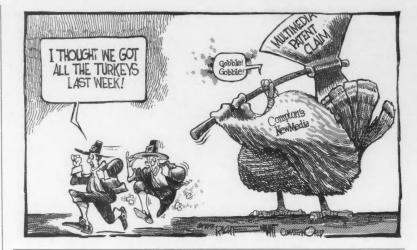
The fact remains that corporate customers are going to take a measured approach to NT implementation. Microsoft is making big promises, such that 40% of the customers we surveyed claimed they'll buy NT in the future. But a buyer's "plan to purchase" is directly related to a vendor's "ability to deliver." And right now, IBM can deliver more with OS/2 than Microsoft can with NT

On the hardware front, IBM has an opportunity to do what it failed so miserably at in the '70s and '80s, and that is to provide a scalable architecture. The PowerPC architecture, jointly developed with Motorola and Apple, promises just that, while giving a fat and happy Intel the first threat to its 75% microprocessor market share. Compared with Intel's Pentium, the PowerPC is faster, much cheaper and much smaller

But what about that oppressive, subordinating IBM culture that so effectively snuffed out the entrepreneurial spirit wherever it sprung up? In a recent interview with us, Cannavino sounded like a man charged with a culture-kill mission (see story page 137). Asked if the most sacred of IBM deities - account control - is dead, he replied in the affirmative.

Being great is one thing. Being great twice is another, because the tendency is to employ the same strategy in two very different circumstances. Whether IBM can avoid doing so will determine if there's a new IBM emerging or just the old one continuing to submerge.





#### Cyberpunks and other villains

It was about 1976 when Computerworld uncovered the evil "hackers" that moved among us. Now, in a long overdue repeat of this public service, we are warned to watch out for those "cyberpunks" who carry stun guns at their side ["Nerds with an attitude," CW, Nov. 8]. Thank you, oh vigilant watchers!

I need your advice on some other suspicious figures in my company. I think that what I have seen them doing is called "writing."

Some of them use pens or even pencils. This is suspicious, pointless behavior, because how can you compile something written on paper? Paper is for printouts, of course.

I overheard one of them say that he was a "free-lancer," whatever that is. It sounds violent, kind of medieval.

He was apparently sending his writings out of the company, to something called a "magazine." While I'm not sure what the point of this activity could be, he's obviously not doing this for the corporate good.

The patterns of his behavior seem ominous to me. I hope you can investigate his type and see if there are any others like him in other organizations.

To help you spot him, he often wears tweed jackets and has what I take to be a manual for his misbehaviors, called something like Strunk and White.

> Joshua Stern Los Angeles

#### EDS says: No deal, no sale

It was noted in the Oct. 11 Inside Lines column under the heading "The partial plan" that rumors were circulating concerning the sale of Electronic Data Systems by General Motors and, according to the article. "a more likely development is that EDS will shed some operations.'

It was stated that EDS had 'put its automated teller and Cummins Cash units on the block."

This is not true. Both of these areas are vital contributors to the success of EDS and the services we provide our customers.

John E. Norton Freight Services EDS Travel and Transportation Group Plano, Texas

#### tion mode under Windows NT while the text of the article correctly states that a recompile of the application software would be necessary. Readers are being misled into believing that their DOS/Windows applications would execute on the PowerPC when using Win-

dows NT.

The industry analysts also fail to mention IBM's WorkPlace OS as a strategic operating system for the PowerPC. I was under the impression that IBM had designed WorkPlace OS explicitly for the PowerPC platform.

tions could be executed in emula-

Why was it not included in the article?

My subscription to Computerworld is based on a belief that the newspaper has historically provided timely and relevant information in an objective manner. Please, leave the hyping of Microsoft operating systems, environments and products to the Microsoft marketing department.

David Loader Sugar Land, Texas



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#### Where was news of WorkPlace OS?

"Nuts, bolts and chips" [CW, Nov. 15] presented a very obvious slant toward Windows NT and its supposed role in the next generation of PCs.

The "PowerPC 601" chart implies that DOS/Windows applica-

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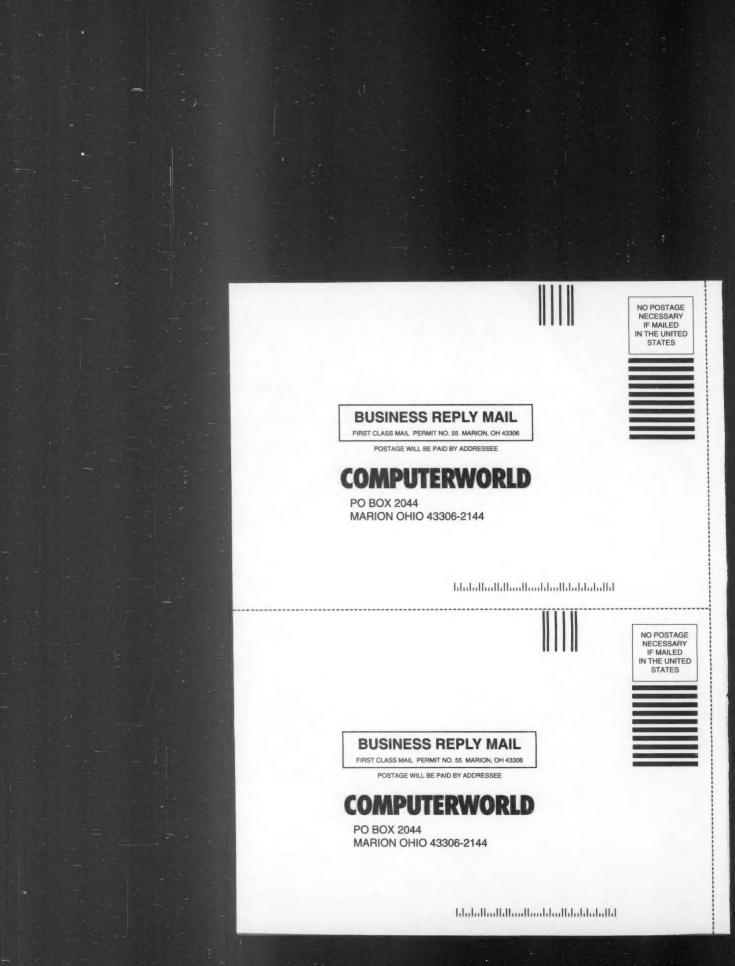
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#### Work escapes the office

#### Ellis Booker

hree years ago, long before anybody floated the phrase "virtual office." I was standing in my kitchen in Chicago calling a senior information systems executive at a New York bank.

I was in my kitchen because it was 6:30 a.m. in Chicago and 7:30 a.m. in New York, and this time was the only possible "window" during which I could reach him, as he had curtly explained to me the day before.

I dialed, the executive picked up and we commenced a formal, businesslike interview

Then, disaster. My sons, ages 3 and 5, galloped down the stairs

"Breakfast!" they bellowed, not quite in unison. "Eggs. . . . No, cereal!" I clamped my hand over the receiver and hissed, "Go away. Daddy is on the phone. Daddy is working."

They smiled and galloped back upstairs. I gingerly resumed the interview, praying that the executive on the line would merely assume he had heard the Xerox repairman telling me about his breakfast preferences.

If the bank executive heard children in the background, he didn't say. Likewise, I didn't volunteer that I was at my kitchen table wearing a bathrobe.

In the intervening years, however, I've detected a subtle but important shift in what can be called the social acceptance of the "kitchen call-back." Conducting business from places



other than the traditional office, while not the rule, is no longer deemed an offense

There are, it seems to me, at least three reasons for this welcome shift:

·Store-and-forward. Technologies such as voice mail and electronic mail detach work from time and place constraints and encourage workers to check for messages from wherever or whenever. Often, the wherever is home, and the whenever is after "The Simpsons."

· Portables. Everyone I know owns a modemequipped laptop computer from which they often work at home or from a deck chair at a neighbor's cookout (more on obsessive workers another time). The coming generation of personal digital assistants will add momentum to this trend.

Affordable and easy-to-use wireless networks will complete the circuit, making it possible to log on to the office server while riding the subway, sitting in the dentist office or lounging on a beach.

·Feminism. The women's movement and the influx of women in the work force has changed U.S. culture for the better in many ways, including smudging the once clear line between work life and home life. Today, reasonable people view these realms as two parts of a single engine.

From the perspective of my kitchen, things are definitely changing. Two nights ago, I interviewed a guy from a Fortune 100 pharmaceutical firm. He called me from his cellular



Booker is Computerworld's Chicago bureau chief.

#### Client/server: It could get bloody

#### Michael Schrage

emember the agony of being trapped in the slowest bank line? No matter how carefully you calibrated the queues or analyzed the tellers, you invariably picked the line filled with transactions too complex for your teller to execute without help or with customers who had more long-winded questions than hard cash. It just wasn't fair.

Then, of course, the banks did something clever (no, not ATMs). They junked the oneteller-per-queue concept and substituted a giant single line through which customers fed out to individual tellers. Even though this statistically increased the average waiting time, the single queue dramatically reduced the variance between lines. While single queues may not be more mathematically efficient, they're a clear example of a "recentralization" innovation that ultimately seems fairer and less frustrating.

As companies relentlessly continue to decentralize their information processing through the medium of client/server architectures, one can't help wondering if they will inadvertently recreate the kind of tensions associated with bank queues and seeing someone who came in after you get faster and better service. In a bank, of course, this merely boosts your blood pressure: in companies with tight budgets, it's an open invitation to vicious organizational infighting.

In a corporate environment where departments have wildly different skill levels and competencies - which is most of corporate America - information technology decentralization is unfortunately more likely to be a source of fragmentation than flexibility. Instead of creatively linking the organization in

Client/server

decentralization

could be an open

vicious organiza-

tional infighting.

invitation to

productive new ways, client/server infrastructures will likely widen the gaps and exacerbate the stresses among departments.

Why? Because organizational decentralization inherently promotes organizational disparities. While it may be true

that client/server architectures will allow seamless integration of data and processing, it will prove equally true that some departments are better at building applications and utilities than others. The wider and more pervasive the variances, the nastier the organizational disputes.

Suppose, for example, some parts of the organization can exchange information electronically with key customers and suppliers. but others can't yet. How does that affect the internal balance of power? Suppose, with its client/server platform, one division can perform more persuasive data analyses on a customer base than its rival division. Who gets the extra funds from the head office? What happens when one department continually lags two or three quarters behind in the implementation of enterprisewide upgrades?

Now you're welcome to respond that good old Darwinian pressures of the internal marketplace will determine who wins and who gets fired, but then you're effectively conceding that decentralized/ distributed information technology will become as much an

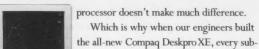
organizational battleground as a medium for productivity.

The real difficulty for information technology leaders won't be implementing client/ server decentralization and assuring seamless integration but managing and alleviating the disparities that these architectures will inevitably create. You can bank on it.

Schrage is a fellow at the MIT Sloan School Center for Coordination Science and the MIT Media Lab. His Internet address is schrage@media-lab.mit.edu.



Il the horsepower in the world is worthless if you can't make the most of it. And the same is true when it comes to computers. Performance is determined not only by the chip, but by the computer around the chip. After all, if the subsystems slow you down, having a powerful



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# **Desktop Computing**

REPORT WRITER FOR OLE, 38 OS/2 SUCCESS, 42 NEW PRODUCTS, 43

Paul Gillin

#### Comdex: No gain for users



This year's Comdex was sort of like a big bowl of popcorn: large and appetizing, but when you come right down to it,

mostly air.

Vendors reached new heights of idiocy, using stunts to attract attention (anyone who can draw a link between LANs and a comedian juggling knives and riding a unicycle wins a free Ginsu). And attendees gaped in awe at juryrigged demos like cavemen seeing a Coke bottle for the first time. It was all very pretty, but it did very little to advance the state of the art.

Case in point: The big stories at Comdex were about technologies that let users install add-in boards quickly and painlessly, link graphics seamlessly into computer hardware and integrate networks with the operating system. In short, after nine years, the PC industry has finally succeeded in re-

making the Macintosh. I guess this is important in some parallel universe, but to users struggling to get two E-mail systems to talk to each other in the real world, it seems pretty trivial.

The PC industry has always had an incredible capacity for self-congratulation, and Comdex is its annual self-conferred reward for a job well-done. But the unrelenting spew of "smaller, faster, cheaper" is wearing thin as the problems facing corporate IS become more complex and resistant to a quick fix with a hot box.

The last interesting Comdex was in 1991, when Windows' presence was beginning to be felt and software vendors experimented with some really new ways of doing things. In the two years since, the software business has lapsed back into its more comfortable habit of cramming each shrinkwrapped box with more features that fewer people will use.

#### Gizmos galore

Hardware makers are happy to take cover briefly from their self-destructive price wars and strut their new Whizzer machine with the Ronco Wonder Chip that will draw Madelbrot diagrams twice as fast as the other guy's. I'm sure this is interesting to someone but probably not to the 75% of buyers who still use their machines principally for word processing, spreadsheets and E-mail.

The basic disconnect of Comdex struck me while I was standing in a long phone line just off the show floor. A fellow in front of me, evi-

Comdex, page 38

### Drag and drop for DOS

Workplace Shell for DOS nears beta testing stage

By Ed Scannell

IBM's Personal Software Products group finally showed off an early version of its Workplace Shell for DOS at this month's Comdex/Fall '93, saying the product would enter beta testing in the next month or so.

Just like its big brother — the version that sits on top of OS/2 2.1 — Workplace Shell for DOS gives DOS users the ability to drag and drop files to other directories or be printed. Users can also resize and scroll through windows.

Users will not get preemptive multitasking, but they will be able to rapidly switch tasks among several DOS and Windows applications.

training costs at some large corporate accounts using both DOS and OS/2 2.X.

But whether it allows IBM's DOS 6.1 to significantly cut into Microsoft's almost monopolistic control of the DOS and Windows market is questionable.

#### **Marketing machine**

Microsoft has already sold well over 5 million retail copies of DOS 6.0 and maybe twice that many through its hundreds of OEM contracts, according to estimates by Microsoft. IBM has sold about 300,000 copies of PC DOS 6.1.

If IBM had been able to ship PC DOS 6.1 in tandem with Workplace for DOS last spring when Microsoft's MS-DOS 6.0 was getting hammered for bugs, IBM could have built some momentum, some corporate users said.

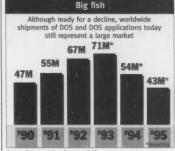
"Last spring IBM could have sold the story that it had m more solid product and offered some significant value add [over MS-DOS 6.0] with a superior interface," said Mike Drips, a consultant and corporate beta tester of DOS and Windows in Tampa, Fla. "But now it might be tough to sell that story."

#### Window of opportunity

Microsoft is not expected to deliver the 32-bit version of Windows 4.0, which is said to have somewhat of an object-oriented look and feel, until late 1994. The more optimistic believe this means IBM has a chance to make more than pocket money.

"If users feel comfortable about its [PC DOS 6.1's] stability, and this shell lets them more easily get at DOS functions — easier than Windows — they should win over some corporate fans," said one user who has toured through an early version of Workplace for DOS.

Workplace Shell, page 38



Source: Dataquest, Inc., San Jose, Calif.

Unlike the hefty memory and disk storage requirements for the OS/2 version of the Workplace Shell, DOS users need only an 80286-based system with 1M byte of memory to operate the program.

The DOS version of the shell gives Personal Software Products a unified look and feel to its operating systems line, which may reduce

# Upcoming PowerBooks ready for PowerPC board swaps

By James Daly

Users of Apple Computer, Inc. Power-Books who want to take advantage of the speedy PowerPC chip are beginning to see an upgrade path hacked out by both Apple and third-party developers.

Analysts familiar with Apple's plans said the company will introduce a family of PowerBooks based on Motorola, Inc.'s 68040 microprocessor by the middle of next year. That is the chip Apple has targeted as the springboard to the RISCbased PowerPC.

Unlike other PowerBooks, the new models will have processors mounted on easily removed daughtercards, making it easy to replace them with the PowerPC 603 processor designed for the Macintosh portable line. The power-efficient PowerPC 603 is comparable in performance to the 601, which is expected to begin shipping in entry-level models in March.

Analysts said exact pricing has not been established for the upgrade boards, but it is likely they would cost from \$1,00 to \$1,500 and operate in the 66-to 88-MHz range. Apple is also expected to offer 603 upgrades for the Duo line as well.

#### **Honorable intentions**

Another upgrade offering is being developed by Reply Corp. in San Jose, Calif. At Comdex/Fall '93, Reply announced its "intention to develop" PowerPC 603-based logic board upgrades for 680x0-based Macintoshes.

In March, Apple is expected to ship several entry-level desktop Macintoshes based on the PowerPC 601 chip, which is a collaborative effort among Apple, IBM and Motorola.

Apple spokeswoman Betty Taylor said the company intends to provide PowerPC upgrades for 68040-based Macintosher including the Macintosh Centris 610, 650 and 660AY; Macintosh IIVX and IIVI; Performa 600; and Quadra 800 and 840AV systems. Developers such as DayStar Digital, Inc. have promised to make upgrade cards available for the Quadra 700, 900 and 950 models.

The upgrade plans are welcome news for Macintosh fans such as Brian Comnes, manager of the information center at DHL Airways, Inc. in Redwood City, Calif. "We have to make plans for the future, so it's good to hear that we're getting some direction," Comnes cald.

The PowerBook has been a hot seller since Apple introduced it at Comdex/Fall

'91. The company recently claimed to have sold its millionth PowerBook. In addition, research firm International Data Corp. (IDC) says PowerBook sales will be up 32% this year, from 440,000 in 1992 to 580,000 in 1993.

#### Leader no more

Recently, however, some users have begun to criticize Apple for not staying technologically abreast of the competition [CW, Nov. 15]. "The PowerBook just doesn't leap out from the pack the way it used to," said Eric Lewis, an analyst at IDC.

The PowerPC upgrade path is an important move for Apple but not the only surprise the company has planned for the line

Sources at Apple said engineers are busy trying to add a PCMCIA card to a 68040-based PowerBook by next year. PCMCIA cards are tiny devices that contain hard drives, modems or additional memory.

#### UPS delivers new bar-code system to public domain

By Michael Fitzgerald

Drivers for United Parcel Service, Inc. will be carrying a new handheld computer in their delivery trucks this holiday season.

UPS recently announced a complete upgrade to its delivery system and some new technologies here at Comdex/Fall '93, including the following:

•The Delivery Information Acquisition Device (DIAD) II. UPS designed the 7- by 12-in., cellular-equipped DIAD II, which uses the company's proprietary software. To be built by Motorola, Inc., it replaces the 3-year-old DIAD I.

 Maxicode, an alternative bar code that stores significantly more information in the same space as a conventional bar code.
 The Customer Interface Device (CID), a tool to let UPS drivers upload and download package information at the pick-up site.

Lynn Newport, vice president of re-



Lynn Newport, vice president of R&D, said UPS is looking for a competitive advantage from its new inhouse-designed technology in the tight package-delivery market

search and development at UPS, said it took five years and some \$5 million in de-

welopment costs to build just the Maxicode symbol and related technology, which the company bills as a competitive advantage. For instance, customers who choose the Maxicode or CID systems may find themselves locked into a particular way of sending packages.

#### It's a battlefield

In the battle for account control among the major package delivery services, "it's definitely part of the strategy to bond with the customer" through the use of technology, Newbort said.

While UPS will put its Maxicode bar-code alternative in the public domain, it will stipulate that certain related technologies, such as a camera that reads Maxicode, not be sold to competitors such as Federal Express Corp.

Newport estimated it would take a decade to outfit all of UPS' 1,400 facilities with

Maxicode systems. DIAD II, in contrast, will be out much faster. UPS has purchased 21,000 DIAD II units to roll out before Christmas and expects to give all of its 55,000 drivers the new system by the end of 1995.

The DIAD II weighs almost a pound less than the clipboard-sized DIAD I. It is also backlit, smaller and better balanced than its predecessor, according to UPS.

Jim McFadden, n UPS driver, said he and his colleagues tend to type with their thumbs while walking, and new dual-function keys and a smaller keyboard make it possible to reach all of the keys.

CID has a parallel connector so it can attach to both printers and PCs. The PC would recognize it as a virtual disk drive. The CID system goes into alpha testing next year.

#### Comdex

CONTINUED FROM PAGE 37

dently a PC support specialist in some user company, was shouting into the phone and gesturing angrily. From what I could hear, it seemed some crucial network component back at the office had gone on the fritz, and the poor guy was the only person in the company who knew what was wrong. He was demanding that whoever was on the other end of the line get the vendor out to the site and fix the @%IS% thing.

I felt bad for the guy. A few feet away from him stood the doors to a computer Disney World, m place where E-mail always reaches its destination, packets always switch and everyone goes home at 5 p.m. On stage at a wendor booth, the accountant in Tucson, Ariz., was

sharing the document with the manager in Philadelphia while both cracked jokes and marveled at how easy it all was. Shows started every half hour.

Meanwhile, the real world went on outside. Corporate users attempting to connect their network operating systems were foiled by the fact that the CEOs at the two most important companies in the PC industry hate each other. The dominant user interface on the desktop continued to be based on a model designed in the early 1970s and commercialized nearly 10 years ago. Open systems were open only so long as you used one vendor's open system.

The juggler with the knives would have had a hard time making a joke out of that one. Pass the popcorn.

Gillin is Computerworld's editor. His MCI Mail address is 575-4120.

#### **Workplace Shell**

CONTINUED FROM PAGE 37

The product offers users two different ways to look at information—folder views and directory views. Folder views let users organize objects in the way that best suits how they work. Directory views let them look at and change data on their hard drives.

One drawback to the shell now is that there is no software development kit that lets DOS developers rewrite existing or new applications that fully exploit some of the new shell's sexier features.

At Comdex, Personal Software

Products President Lee Reiswig said the company is considering offering a development kit, but he declined to say when that decision would be made.

#### **Helping hand**

Some of the technology used in the product was licensed from Paper Software, Inc., a small start-up in upstate New York. Earlier this year, the company shipped Version 2.01 of its Sidebar product, which was designed as a Windows shell.

Despite Sidebar's object-oriented look and feel, it takes up a scant 250K bytes of memory, compared with the several megabytes required by OS/2 Workplace Shell.

# OLE support penned into Windows report writer for PC, SQL databases

By Michael Vizard

ReportSmith, Inc. launched last week at Comdex/Fall '93 the first Windows report writer for SQL and PC databases that will support Object Linking and Embedding (OLE) 2.0.

As one of the first traditional information systems tools to support OLE 2.0, the latest version of ReportSmith seeks to bridge the gap between traditional PC applications and report writers for databases, the San Mateo, Calif., company said.

To accomplish this, ReportSmith 2.0 will allow users to click on an icon to create a report using SQL. To create compound documents, that data can then be integrated with word processing and spreadsheet applications in Microsoft Corp.'s Office suite that support OLE 2.0. For example, the Department of Envi-

ronmental Protection for the state of Maine is using ReportSmith as an end-user query tool for accessing Microsoft's FoxPro databases running on a Novell, Inc. NetWare server and SQL databases from Oracle Corp. running on a Digital Equipment Corp. Ultrix system.

#### No need to know SQL

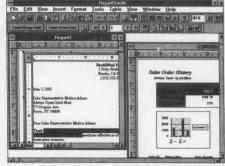
"Basically, it allows our users to generate reports on specific topics from their Windows system without ever having to touch a keyboard. ReportSmith provides a common report writer to 95% of our databases and takes away having to know SQL from the users," said Wayne Gallant, systems team leader at the state agency.

With the arrival of Version 2.0, Gallant said, he will start investigating how to better integrate those reports with PC

applications via live links created using the Basic derivative from ReportSmith to drive OLE 2.0 and Dynamic Data Exchange (DDE) protocols.

"We'll be looking at OLE and DDE down the road. Right now, we don't have enough experience to work with them yet," Gallant said.

He said in the short term his agency will take advantage of two other features that are included in the new release. One of those features is improved support for creating labels; the other is the ability to do subqueries on tables that occur in multiple places in a database. a key ele-



 $\label{lem:continuous} \textbf{The new version of ReportSmith} \ now \ supports \ OLE \ 2.0, \ which \ should \ enable \ PC \ users \ to \ generate \ reports \ from \ within \ Windows \ applications$ 

ment for Gallant.

Priced at \$299, ReportSmith 2.0 also includes support for cross-tab reporting, default report formats and a draft mode that allows users to preview a report. It is scheduled to be available next month.

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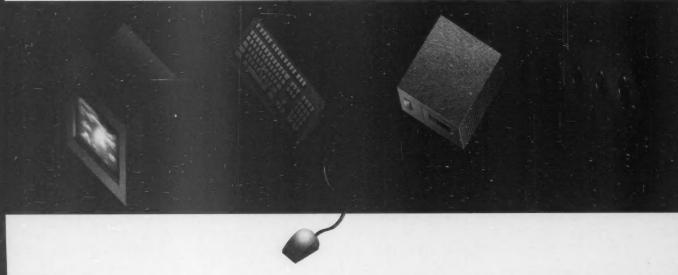


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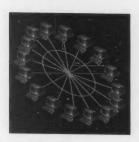
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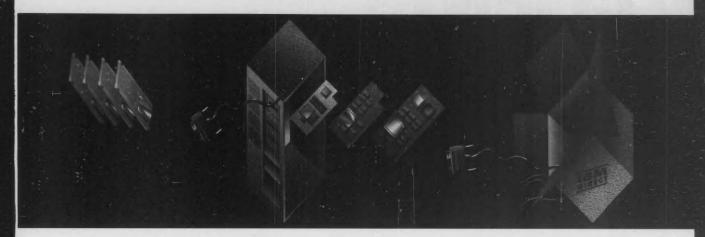
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THE SAS" SYSTEM FOR INFORMATION DELIVER

Carole Patton

#### OS/2moves out -alone



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With its installed OS/2 user base approaching 3.5 million. IBM can legitimately hoist a blue victory flag over the high-end PC desktop market. But how to

apportion this success? Is it due to OS/2 alone or to OS/2's ability to run Windows? IBM will soon release a version of OS/22.1. code-named Ferengi, without the Windows code - and we'll all find

In the IBM vs. Microsoft desktop war. Ferengi (which will be tagged "OS/2 Special Edition" or something similar when it hits the street) represents a critical turning point. In May 1992, when OS/2 2.0 shipped, corporate America still did most of its computing on machines with 2M bytes or less of RAM, an amount insufficient to cope with OS/2's hefty 8Mbyte minimum requirement.

At the same time, third-party developers, cashing in on the Windows boom. gave little thought to OS/2. Short term. with few native applications, IBM banked on OS/2's ability to run Windows and DOS programs to keep its advanced, 32-bit operating system alive and viable.

But now IBM must expand its OS/2 user base. And Ferengi, due out this month, may well do the trick. The strategy is based on simple economics: Ferengi will contain no Windows code, but it will interact with Windows 3.1 just as if it were OS/2's embedded Win/OS code. Users will continue to run DOS and Windows applications, but Ferengi will sell for around \$39, well below the current retail price for OS/2.

More importantly, sales of preloaded OS/2 could rise dramatically once PC manufacturers realize they won't be paying Windows royalties twice (once for Windows and once for OS/2's Win/OS)

And there's yet another surprise up IBM's sleeve. It's a neat little peer-to-peer version of OS/2 that's still in beta testing. This product requires just 8M bytes of hard disk real estate

Both Ferengi and peer-to-peer OS/2 should quickly move IBM's operating system onto more desktops. But what Big Blue needs most to win the operating system war is native 32-bit OS/2 applications. Most Windows developers are planning to move their 16-bit applications to Microsoft's Win32s, and these programs just won't run under 32-bit OS/2. Win32s represents a compatibility fork in the Windows-OS/2 evolutionary path. Choosing OS/2 instead of Windows could soon mean taking "the road less traveled."

Or will it? IBM is making a stand. OS/2 has been given an evolutionary plan of its own, leading directly to the new world of objects. All that's needed now is a couple of great software packages to help increase OS/2's retail appeal. Perhaps good word processors like Ami Pro for OS/2 or WordPerfect 6.0 for OS/2. which are both due to ship soon. Or perhaps the upgrade to 1-2-3 for OS/2 and Freelance for OS/2 (both due from Lotus in the first quarter of 1994) will do the

#### Nice utilities

OS/2 already has some nice utilities. many from small developers. There's Deskman/2, an invaluable helper from Development Technologies, Inc. in Forest Acres, S.C. It's invaluable because each object on the OS/2 desktop has settings (like copy and delete) that are not available elsewhere

Then there's Golden CommPass. communications program for automating access to CompuServe. In its first iteration, this program locked up my system on more than one occasion. But its developer, Creative Systems Programming in Mount Laurel, N.J., made the needed fixes, and the latest version (2.1) looks good.

More OS/2 goodies are emerging every day. The latest, CursorPower for OS/2 from North Shore Systems, Inc. in Incline Village, Nev., lets you resize (and redesign) your cursor.

Now, anyone care to guess what "Ferengi" really means?

Patton is president of the Mendham Technology Group in Mendham, N.J., which produces Client/Server summits for corporate strategists. Her MCI Mail address is 401-4869.

#### Briefs

#### **Ministor PCMCIA products**

Disk drive maker Ministor Peripherals Corp. announced that CompUSA will carry its line of PCMCIA products.

#### PCs in the U.S.

Advanced Logic Research, Inc. will supply Siemens Nixdorf Information Systems, Inc. with PCs, including the Intel Corp. Pentium-based ALR Evolution VQ, for sale in the U.S.

#### Pen-based computers

Texas Utilities Electric in Fort Worth, Texas, will use Fujitsu Personal Systems, Inc. PoqetPad Plus pen-based computers as part of a project to automate work crew timekeeping and job-tracking data collection.

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CAD manufacturing

#### AutoDesk enters new market

Despite leading the PC-based computeraided design (CAD) market with Auto-CAD, AutoDesk, Inc. in Sausalito, Calif., has so far struggled to crack the manufacturing market.

That could change with a AutoCAD companion product introduced with much fanfare earlier this month at the Autofact trade show in Chicago

Called AutoCAD Designer, the three-dimensional solid modeler is aimed specifically at manufacturing engineers responsible for designing parts. A so-called "associative" design tool, Designer permits users to modify drawings and have these changes dynamically updated on a detailed manufacturing diagram or vice

#### The "CAM" side

Analysts said Designer finally addresses the "CAM" side of AutoDesk's computeraided design/computer-aided manufacturing (CAD/CAM) product line.

However, migrating users from two-dimensional to 3-D design tools is still a "big step," said Joel Orr, chairman at Orr Associates, Inc. in Virginia Beach. Auto-Desk officials agree but said because the tool works within AutoCAD Release 12-AutoCAD now leads the PC-based

CAD/CAM market with nearly 1 million users worldwide - the transition will be much easier.

"In the past, design tools of this quality were either out of the price range of most customers or too complex," said Ken Spenser, general manager at AutoDesk Mechanical Division. "Now, 3-D design and manufacturing is no longer for the

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#### In the future

The first release of Designer does not handle part "assemblies" used in complex manufactured machines such as cars and lawnmowers. Future versions will be able to handle these items. Auto-Desk officials said. The current product is "capable of modeling 80% of the objects you'd find in a garage," they added.

Designer will be available in the first quarter of next year for \$1,500. It requires an 386/486-based PC running DOS 3.3 or higher with a minimum of 8M bytes of RAM and 5M bytes of hard disk

As part of the Designer announcement, AutoDesk released the next version of AutoSurf, its surface-modeling tool for AutoCAD.

Like Designer, AutoSurf runs within AutoCAD Release 12 and will be available in the first quarter of 1994 for \$1,500.

drive, the company said.

(408) 957-6575

The product is available in XT/AT bus configurations with Pentium processors running at 60 and 66 MHz.

PAC-586 pricing begins at \$6,000. ▶ Dolch Computer Systems

Leading Edge Products, Inc. has added advanced features to its WinTower 486 and WinPro 486E line of PCs

According to the Westboro, Mass. company, the models are based on Intel Corp.'s 486SX/25-, 486SX/33-, 486DX/33-, 486DX2/50- and 486DX2/66-MHz chips.

The systems offer 4M bytes of memory, expandable to 64M bytes on the motherboard, and a socket for quick microprocessor upgrades.

Other features include 1M byte of video RAM (upgradable to 2M bytes), 64K bytes of external cache (upgradable to 256K bytes), FlashBIOS technology, five drive bays, four 16-bit XT/AT bus expansion slots, dual floppy drives, one parallel port, two serial ports and a mouse port.

The units also come equipped with a 200W power supply, keyboard and a mouse. Preinstalled software includes Microsoft Corp.'s Windows 3.1, DOS 6.2, Works for Windows, Money, Productivity Pack, Entertainment Pack 4 and the company's Utilities Control Center.

Prices range from \$1,359 for the Win-Tower 486SX/33 MHz with n 170M-byte hard drive to \$2,199 for the 486DX2/66 MHz with a 345M-byte hard drive.

► Leading Edge Products (508) 836-4800

#### **Comdex products**

Canon Computer Systems, Inc. introduced the BJ-10Sx, an enhanced performance, lighter-weight model of its Bubble Jet printer.

According to the Costa Mesa, Calif., company, the printer features a 1.9-in. profile, weighs 3.7 pounds and delivers 360 dot/in. laser-like output. It is 30% faster than its predecessor.

The BJ-10Sx can operate with either AC power or an optional battery pack that lets users print up to 40 pages from a single charge.

The product employs a high-resolution 64-nozzle print head that produces 360 dot/in, resolution on letter and legal-size plain paper, envelopes or transparen-

The BJ-10Sx costs \$349.

Canon Computer Systems (714) 438-3000

Dolch Computer Systems introduced the PAC-586, a Pentium-based portable computer.

According to the Milpitas, Calif., company, the PAC-586 delivers 47 MIPS and comes standard with five full-length slots and 275W of system power.

The platforms can accommodate a combination of three drives to include a floppy drive, a hard drive up to 1G byte in size and a 51/+in. drive such as a CD-ROM

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#### 1-2-3 RELEASE 4 BRINGS IT ALL TOGETHER.



Once again, the world of spreadsheet users is coming together around Lotus\* 1-2-3.\*

The new 1-2-3

Release 4 for Windows<sup>™</sup> has made using a spreadsheet easier, faster and dramatically

more productive for everyone based on hundreds of advancements in functionality and usability.

In fact, a recent independent study reported that 67% of current Microsoft\* Excel users surveyed would prefer to be using 1-2-3 Release 4.†

But it's the Working Together\* features of 1-2-3 that are redefining the spreadsheet. These unparalleled workgroup capabilities are not only improving the way people work with spreadsheets, they're improving the way people work with each other.

Users who often collaborate on developing and refining worksheet data...will find Release 4 indispensable. PC/WEEK, 5/3/93

#### CONNECT ON A BASIC LEVEL.

The first level of Working Together is net-

# TION DISCOVERS EADSHET.

working. Every 1-2-3 package can be installed on the network right out of the box. No special version is required. And because 1-2-3 and all other Lotus Windows applications are mailenabled, you can quickly and easily share your data with others on the network. And vice versa.

#### COLLABORATE ON A HIGHER PLANE.

The real power of Working Together comes from 1-2-3's advanced Versioning technology

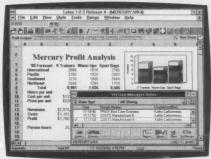
and group editing powers. These are features no competitor can match.

With Version Manager™ technology, workgroup members know who made what contributions to a file, when and why. Each group member can save, label, track mix merge and comment on ranges, worksheets or entire files. And do it all without overwriting existing data or making multiple copies of the same file. Now we're sharing ideas, not merely sending spreadsheets.

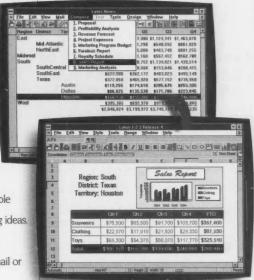
All this can be done over LANS, e-mail or even diskettes for that matter.

#### RAISE YOUR GROUP CONSCIOUSNESS.

Working Together with 1-2-3 can be further enhanced with Lotus Notes® the market-leading



Version Manager lets each member of your workgroup know who made what changes to a file, when and why.



With Notes/FX, you and your workerous can store, distribute, and manage 1-2-3 data in Lotus Notes. And with a simple click of your mouse, you will instantly be launched into 1-2-3 and the underlying spreadsheet to get the specifics.

groupware. Notes allows different users to access, track and share work on the same

spreadsheet at the same time, with the full security of a Notes database. And it's all updated in real time. As a result, teams can collaborate to perform everyday business processes in ways never before possible. Ways that are faster and much more productive.

And with Notes/FX<sup>™</sup> you can not only access and share 1-2-3 data in a Notes database, you can double click in the Notes form and instantly be launched into the underlying spreadsheet in 1-2-3. Now you've got the spreadsheet power to edit the data.

Notes also features replication, so traveling team members are immediately up-to-date as soon as they reconnect to the network.

To join the hundreds of thousands who are switching to Lotus 1-2-3 Release 4, call 1-800-TRADE UP, ext. 9334,\* or visit your Lotus Authorized Reseller. It's not only easy to work with, it actually makes you easy to work with.



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You could save up to thousands of dollars with this limited-time installation offer from Bell Atlantic.

Now a faster, more efficient way for your organization to exchange information is available for less. Through January 19, 1994, Bell Atlantic\*\* is making Interstate Special Access Services more accessible than ever. With this offer, you can save the one-time installation charges on the dedicated access connection services you see here. Depending on what you install and your application, that could add up to thousands of dollars in savings for your organization.

So if you want to upgrade your communications network from analog to digital—or enhance your current digital network—this is the perfect opportunity. You can save now by using your remaining 1993 budget or planning ahead for your 1994 spending. Either way, you'll be proactively meeting your upcoming special access requirements. Call your Bell Atlantic representative at 1 800 416-4150 and ask about this limited-time offer today—because you won't be seeing it around much longer.

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\*Waived charges include one-time, non-recurring installation charges for the Bell Atlantic interstate Special Access Services mentioned.

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**Bell Atlantic** 

# wireless standard

Users frustrated by the drawn-out wireless standards process recently got a boost following a meeting of the Institute of Electrical

Users move cautiously When do you expect to implement wireless LANs? 51% 26%

and Electronics Engineers, Inc.

(IEEE) in West Palm Beach, Fla. In a move that brought interop-

erable wireless LAN products closer to reality, the 802.11 wireless LAN committee voted to base the

forthcoming standard wireless media-access control (MAC) protocol on a proposal called DFW MAC that was submitted by Xircom, Inc., NCR Corp. and Symbol Technologies, Inc.

The goal of the protocol - which defines how wireless devices interact with a network-is to allow mobile users to roam freely throughout a building or campus while maintaining a continuous, seamless connection to network resources.

"This is definitely a milestone that will keep wireless going forward," said Lt. Fred Taylor, an engineer in the interoper-

ability test center at the U.S. Air Force Command and Control Communications and Computer Agency in Scott Air Force Base, Ill. The center is testing various forms of

Wireless, page 50

# LAN group votes on DEC plans PC servers

Single multis

Digital also plans to go

the multiprocessor

route at the single-user

level next year. The

company said

dual-processor

versions of its

Pentium-based DECpc

XL premium systems

should be ready by

springtime, the same

general time frame

targeted for the

multiprocessor server

rollout. Also in the

pipeline for first-half

release are slim-line

desktop models of the

DECDC XL.

By Craig Stedman

■ Digital Equipment Corp.'s PC business unit plans to introduce next spring a line of multi-

processor LAN servers in an attempt to become more competitive with the likes of Compag Computer Corp. and IBM in that part of the market, where Digital has only a minor presence now.

The servers initially will be sold with up to four Intel Corp. Pentium microprocessors, said Lex Dekkers, a PC product line manager at Digital. But he added that the servers will also eventually support Digital's own Alpha AXP chips, a modular approach the company is also using on recently introduced DECpc XL single-user machines [CW, Nov. 8].

Other features planned for the servers include uninterruptible power supplies and support for redundant arrays of inexpensive disks, Dekkers said. Analysts noted that they also expect Digital to

use advanced SCSI-2 storage and Error Correcting Code memory in order to match Compaq and IBM.

Digital's existing LAN server, the DECpc 400ST, is limited to a single processor and will be 2 years old by springtime. "They definitely need some updating at the server end," said

> Randal Giusto, a PC analyst at WorkGroup Technologies, Inc., a consulting firm in Hampton, N.H.

> Dave Yakerson, network administrator at Bridgeport Hydraulic Co., a private-sector water utility in Bridgeport, Conn., said the multiprocessor server plans sound intriguing, but he added that Digital first needs to "iron out some of the little bugs" in its desktop PCs.

"If their quality assurance could improve, and I'm not talking drastically, then I would trust them in putting in a real file server," he said. Yakerson, who uses AST Research, Inc. servers, said Bridgeport Hydraulic has had problems with floppy drive failures on Digital's desktop machines.

Steve Williams, network administrator at the Santa Clara Valley Medical Center in Santa Clara, Calif., said the minicomputer-like

features expected to be provided with the upcoming servers could make it easier to down-Multiprocessors, page 48

#### E-mail scheduling faces challenge

While the main players in the PC-based electronic-mail market - Lotus Development Corp., Microsoft Corp. and WordPerfect Corp. — are jockeying to promote their mail-enabled scheduling programs, some users

finding that scheduling based on E-mail is not the best idea.

That is because scheduling packages that rely on E-mail are subject to its untimely store-and-forward nature. Updates to corporate calendars only happen as often as the E-mail post office exchanges messages. In companies that are downsizing from mainframebased office packages, which operate in real time, the delay can be annoying.

Terry Sovil, a project manager at GE Capital Fleet Services in Eden Prairie, Minn., said one of the many benefits to any mainframe-based system is that data is always truly up-to-date because it exists only once. On the LAN, information resides on different servers, and

the related delays in updating calendaring information can be troublesome, "especially if you are dealing with hectic schedules and rooms that are in demand."

To avoid such delays, Pfizer, Inc.'s U.S pharmaceutical group in New York decided to use a calendaring and scheduling package that allows meeting organizers to

search attendees' calendars in real time and book meetings on the spot.

Pfizer evaluated "over a dozen" packages, including Lotus' Organizer, and picked On Time Enterprise for NetWare from Campbell Services, Inc. in Southfield, Mich., for its capabilities, real-time said Todd Greeno, manager of internal consulting.

OnTime services are implemented as Novell, Inc. NetWare Loadable Modules rather than as Email extensions, and the system uses the NetWare Directory Services in Net-Ware 4.0, eliminating the

need for multiple directories. Although it does not depend on E-mail for its transport, it can send meeting notifications to users via the popular E-mail packages, according to Campbell President Donald Campbell.

Although the E-mail-based packages Greeno tested

allowed varying degrees of group searching, they did not have immediate access to calendar information, the ability to book meetings on the spot and security features that let users share calendar information without giving away details about their appointment, he said.

Despite the store-and-forward delay factor, GE Capital Fleet is leaning toward Lotus' Organizer as its group scheduling package to run on top of CC:Mail and Notes. One method to shorten the E-mail-related delay is simply to propagate E-mail exchanges more often, Sovil said. However, that increases the messaging network traffic, he added.

#### Checking up on the postman

o help manage an increased E-mail load, Uniplex Enterprise Systems Group in Greenwich, Conn., recently began shipping software that monitors E-mail systems through graphical representations of the mail

Called MailWatch, the software polls E-mail post offices to make certain they respond in a timely manner. If not, the software sends an alert to the E-mail administrator and changes the graphical representation of the post office from green to yellow or red. Pricing begins at \$5,000; the software works with Lotus' CC: Mail and Microsoft Mail on Windows- and OS/2-based computers. - Lynda Radosevich



Campbell Services is promoting On Time as an alternative to E-mail based schedulers

#### **Workgroup Computing**

Cheryl Gerber

#### Very little flow in work flow

If work-flow technology is being used to automate business forms or alleviate the drudgery of serial processes in manufacturing-which it often is, to great effect flexibility isn't an issue. But when work flow moves out of those static and predictable chores and enters the fluid. changeable realm of human proce its rigidity does become a problem.

The question is whether developers can effectively build software to automate ad hoc human processes.

Looking at current work-flow products, it seems to me that this software is suited only for simple and predictable situations and probably won't ever acquire enough features to accommodate human nature.

Brownell Charlstrom, a leading workflow consultant, is much more upbeat. While conceding that effective implementation of the technology has a long way to go, he maintains that "work flow is suitable for any place where human processes happen." What critics have to understand, Charlstrom says, is that "today's work-flow products are baby steps. Every product on the market is in Re-

Among the deficiencies of the current crop is the complete lack of support for mobile computing. As far as I know, there is not one off-the-shelf or customized work-flow product that gives users the freedom to create a simple work-flow process on the fly and send it from a laptop. There is also no support for wireless computing. Given the growth of those two forms of computing and the fact that every day more business processes require participation from afar, this may be the most glaring problem of all.

But then there is also the highly proprietary, arcane nature of the work-flow development process. The fact is that every work-flow - and workgroup - vendor has its own proprietary scripting language, and the programming is done in two basic ways: with logic expression or drawing products. Only a few trained developers know how to program work-

flow applications in these private languages. The lack of a standard, open method for programming these applications is a serious shortcoming. I'm not inclined to want to see another standards group form, but there might be a real ase for one in this instance

I'd also like to see more specific information in work-flow applications, something Charlstrom calls "easier process specification." For example, I don't just want to know how purchasing is handled in Company A, I want to know how purchasing in Company A is different from purchasing in Company B.

And how about more "If ... then" options? For instance, what happens if the work-flow process

is set up for Administrator A to send a document to Administrator X, but X isn't available? Work-flow applications today assume that everyone is static and routines never vary; that unpredictable human things don't happen.

Susanna Opper, a groupware consultant, likens the use of work-flow processes to The Nine Dot Puzzle, where the solution comes from connecting all the dots without raising the pen or going outside the nine dot area. There are lots of artificial constraints.

If work flow is going to automate real human activities, the technology must be in the hands of the users and must give

If work flow is

going to

automate

human

activities, the

technology

must be in the

hands of the

users.

them the ability to perform real functions ma necessary, no matter where they are. They shouldn't have to know a difficult, private language and Boolean alge bra to automate a new idea in an ad hoc pro-

If work-flow vendors don't make the technology less arcane and more accessible, they can expect to be pushed aside by the likes of Microsoft and Apple, which

plan ad hoc work-flow type functionality in Cairo and the Open Collaboration Environment. And they better move quickly, because they probably have less than a year to prepare for that competition.

Gerber is a free-lance technology writer based in San Francisco. She can be reached on CompuServe at 73142,64.

#### Storage business

### Digital adds NetWare

By Craig Stedman

■ Digital Equipment Corp.'s storage business unit recently expanded its StorageWorks line for non-Digital platforms, introducing a series of products that support Novell, Inc. NetWare v3.11 clients and servers. It also added more models for use with Sun Microsystems, Inc.'s systems.

Digital released an initial set of Sun products last summer in its first storage foray beyond its own customer hase.

The company now is marketing desktop and deskside subsystems, optical jukeboxes and a redundant arrays of inexpensive disks (RAID) unit for both the Net-Ware and Sun environments.

Most of the products introduced earlier this month are shipping now, Digital said. The company is trying to entice NetWare and Sun resellers to sign on to market its devices, although it has not yet disclosed any agreements along those lines.

Digital has high hopes for the off-base storage business, and J. Michael Casey, vice president of storage research at Computer Intelligence/InfoCorp in Santa Clara, Calif., said the breadth and modularity of the company's product line are points in its favor.

#### **High competition**

STORAGE

Solar fare

All of the

StorageWorks for Sun

products except

Digital's RAID Array 110

support both SunOS

A.1.3 and the name

Solaris 2.x operating

system. The RAID unit,

which was originally

scheduled to ship last

summer, is compatible

only with SunOS at

first. Solaris support is

scheduled to be added

in early 1994, Digital

said. The array scales

from 5G bytes of disk

storage to 6oG bytes

on a single controller

Pricing for StorageWorks is also "relatively aggressive," Casey added, but he noted that competition is heavy in both

the NetWare and Sun storage markets. Digital's sales in those markets are unlikely to approach the size of the business the company gets from within its customer base, Casey said.

Fara Yale, an analyst at Dataquest, Inc. in San Jose, Calif., also had words of praise for Digital's technology and pricing.

However, the attempt to build up indirect channels requires a major investment, and Digital still needs "to prove that its commitment is truly long term," she added.

Digital officials said the company is looking to expand the StorageWorks line to other platforms early next year.

Sources indicated that Apple Computer, Inc.'s Macintosh line and Hewlett-Packard Co.'s HP 9000 Unix systems are likely to be among those targeted by the

#### Briefs

#### IBM works with ICL

ICL and IBM announced an agreement under which ICL's Search Accelerator, a specialized package of hardware and software designed to off-load parallel searches of relational database tables, will be available for the IBM RS/6000 line of

#### **Platinum expansion**

Hewlett-Packard Co. and Platinum Software Corp. announced a marketing agreement under which Platinum's Sequel to Platinum financial accounting product is being made available on HP 9000 workstations and servers. In a similar agreement, Platinum and Sun Microsystems, Inc. said the Platinum package is now available on Sun SPARCserver systems

#### ASK, Sun expand deal

The ASK Group, Inc. has expanded its partnership with Sun by adding a series of worldwide cooperative technology, marketing and sales

#### Maestro ported to NCR, Sun

Unison-Tymlabs ported its Maestro for Unix networked work-load management software to NCR Corp. and Sun platforms.

#### Multiprocessors

CONTINUED FROM PAGE 47

size off VAX/VMS machines and switch more operations to Novell, Inc. NetWare LANS.

The hospital has two of the 400ST servers, and Williams said he would likely stay with Digital as a supplier as long as the new machines have competitive pric-

"They're always a little bit late compared to AST or Compaq, but they get there," he said, speaking for himself and not on behalf of the medical center.

Chuck Venter, a Meta Group, Inc. analyst in Westport, Conn., said Digital's service capabilities could help get it accepted as a viable LAN server vendor. "IBM exploits that when it does things right, and I think that's something Digital can also use to its advantage to move forward." he said.

#### A long way to go

Venter added, however, that Digital still faces a tough haul to get its name on the list of companies that users routinely consider for server buys. He said users outside of Digital's installed base mainly think of Compaq and IBM when it comes to servers.

Giusto noted that Digital will have to try to find a way to keep its servers from being viewed as a me-too answer to Compaq's ProLiant family.

"It's going to be difficult to differentiate beyond the Alpha capability, and in users' minds, Alpha is still a big ques-



# NEW WINDOWS FOR WORKGROUPS 3.11 ALLOWS YOU TO NETWORK SMOOTHLY AND EFFICIENTLY.

Running a network that works with the Microsoft Windows operating system is important to your business. Helping you do it successfully is important to ours. And once you discover what Microsoft Windows for Workgroups 3.11 has to offer, we think you'll understand why it's the best version of Windows to run on your network.

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**Microsoft** 

#### **Workgroup Computing**

#### Wireless

CONTINUED FROM PAGE 47

wireless technology for applications such as video teleconferencing.

Taylor said a standard MAC protocol was particularly good news for sites such as Scott Air Force Base, which buy mostly off-the-shelf products instead of developing their own. "It definitely will make things easier for us," he said.

Xircom, NCR and Symbol had been pushing their own separate but similar protocols for standards consideration but agreed to combine their technologies in hopes of speeding up the standards process. This cooperation was a primary reason why DFW MAC beat out competing proposals, including one from IBM.

DFW MAC is based on Xircom's Netwave MAC technology, which Xircom submitted to the IEEE for standards approval in September. DFW stands for Dallas Fort Worth, which is where the three companies drafted the proposal.

While a formal standard is still roughly two years away, 802.11's adoption of the proposal enables vendors to begin developing interoperable wireless LAN products. Users should start seeing products conforming to the standard that run on various physical lavers, such as directsequence, spread-spectrum radio and infrared, by the middle of next year.

Other users said they were more interested in a communications standard.

"A MAC standard is nice, but right now the biggest standard for us is in the communications area — setting a standard for wireless transmission speeds to help cut out interference," said Joe Potocny, MIS director for the city of Mission Viego, Calif. However, Potocny said the MAC standard could be more significant for the city in a year or two, when it plans to integrate mobile users

A wireless pioneer, Mission Viego installed Motorola, Inc.'s Altair Plus wireless LAN in 1991 to support the municipality's 90-plus users. By going wireless, Potocny said he

was able to Cost still high eliminate 80% Analysts said cost was of the city's network cabling still a major hurdle for wireless MAC. The and 90% of its network prob-

Yankee Group estimates the average cost of installing wireless LAN at \$1,170 per user, compared with \$780 and \$880 for **Ethernet and Token** Ring LANS.

tances Analysts said standard MAC protocol

lems, which he

blamed mostly

on wiring con-

dis-

nections

cabling

was necessary but downplayed its impact. "Essentially, it's a window dressing, but it ensures users of some level of compatibility," said Dave Mack, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H. "It's not going to turn on the manufacturing faucet overnight."

Analysts cautioned that standards are never a onetime issue and that users should not be surprised to see n new set of standards developed a year from now or significant modifications made.

Proponents of the standard acknowledged that there was still a long road ahead. "We're not asserting that this is 'the standard' because it's not written in stone yet.... Other companies can still contribute and tweak it," said Phil Belanger, director of marketing for wireless products at Xircom in Calabasas, Calif., and a co-author of the protocol. "However, it does lay a foundation that will allow us to move ahead faster."

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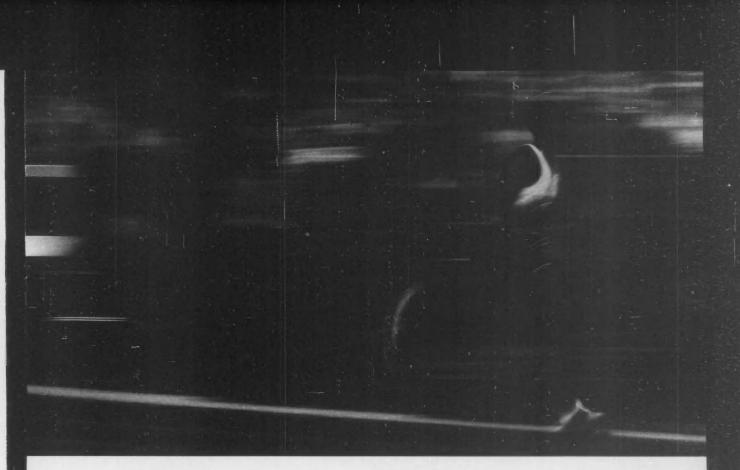
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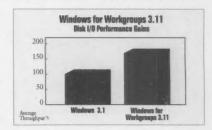


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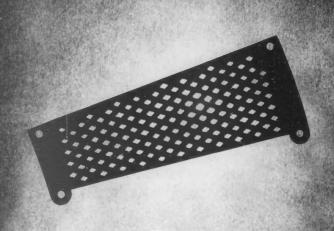
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**Microsoft** 

The disk I/O performance gains represented were measured with Disk WinMark\* performance tests using WinBench' version 3.11 from ZifFDavis Labs. Two test configurations were used and the performance results averaged to produce a study executing. Windless All Carlos (Singal RAM, 2048) RRAM (Zache, 2008) Man band disk, IDE controller, and no hardware disk cache; Tabou et St. usin the 1984/85/25 CFU, 48B RAM, 2048 RRAM (Zache, 2008) Man band disk, IDE controller, and no hardware disk cache; Tests were run using shipping versions of Windless All, 2018 Controller and no hardware disk cache; Tests were run using shipping versions of Windless All, Windlows 3.1, Windlows 3.1



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# WHAT OTHERS PROMISE TOMORROW,

#### Intel, Unisys Said to Plan to Develop Commercial Uses of Parallel Processing

Intel Corp. and Uninys Corp. are learning up in the race to develop a form in high-performance computing power known as parallel processing for the commercial market, industry officials and.
Intel and Uninys declared to com-

Their development agreement, which is scheduled to be annuanted today in Santa Clara, Calif., is an attempt by Intel to move the building blood currently

o hear fruit until 1865. And it will face stiff competition from others who have already intered the market or are planning to coon, among larger companies, that inmarket international Business Macking Corp., which is planning to introduce parallel entry by year end.

ime parallei-com always formed m t is Teredals, not

#### Parallel box draws near

IBM is essentially on schedule with its Enterprise System/9000 parallel processor announcement sat for later this year, a company executive said last week. But the unveiling will likely take place in October—or even later.

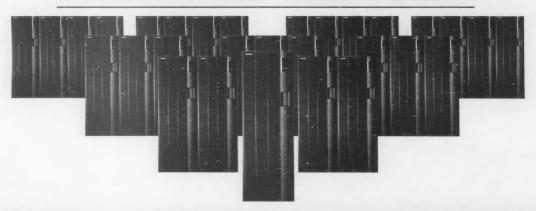
The machine, intended to handle complex database queries and off-load that from the regular mainframe, will be many as 50 processors in 31. It will con-

#### THE PARALLEL UNIVERSE GROWS

Unisys, Intel, and IBM are moving into "alternative mainframes"

If two heads are better than one, why not a dozen? Or 50, or 100? That's the latest thinking in the commercial data processing market. For 40 years, mainframers such as 18x and Unisys have struggled to build the fastest single computer possible. But now they're bumping into fundamental physical limits, making each new speedup terribly expensive. So, the commercial mainframe industry, like supercomputer ers before it, is turning to parelli cessing, ganging together.

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#### Lawnmower maker cuts an EDI path

By Thomas Hoffman MINNEAPOLIS

The Toro Co.'s 1991 acquisition of Lawn-Boy, Inc. was strategically designed to help the lawnmower maker compete more effectively against John Deere & Co., Jacobsen and other players.

Toro furthered those efforts this year by adding finished-goods satellite warehouses to improve shipping cycles of its lawn and turf products, snowblowers and irriga-

and LAN systems, Hansen said. In fact, Toro installed its first electronic-mail system only last January to support communications among its 1,200 manufacturing staff-

mat or in real time," Cabillot said.

Rather than implementing wholesale changes to its electron-

ic networks, Toro is taking a prag-

matic approach to its system rede-

sign. Toro has suffered from weak

financial performance during the

past few years due to poor market

conditions for consumer durables.

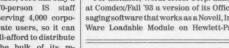
This situation has forced the com-

pany to restructure, keep its allo-

cations for information systems

flat and limit its development of PC

"Management has historically been conservative in adminstrative and MIS spending," said Hansen, who joined the company five years ago after heading up application development for operations and logistics systems at Pillsbury Co. Besides, Toro has only a 70-person IS staff serving 4,000 corporate users, so it can ill-afford to distribute the bulk of its resources to retrofit its



IS. Hansen noted. Instead, the company is overhauling its finished system one piece at a time. "We formation is not nearly accessible enough today, but we plan on taking an evolutionary rather than



Toro's operations, including its finished goods distribution management system, operate on an Amdahl Corp. 5890-300E plugcompatible mainframe running Cobol-based IBM CICS and IMS batch applications. The finished goods distribution system is being modified to incorporate EDI for electronic commerce with its pri-Lawnmower, page 58

Messaging users switch to RISC servers Co.'s PA-RISC computer. The midrange version

■ Faced with PC-based electronic messaging servers that don't scale well, users are increasingly turning to RISC-based hardware to run their messaging systems, according to some users and industry watchers.

The move is driven by the fact that electronic

mail is becoming the enterprisewide platform for other applications, such as forms routing, proautomation and group calendaring and scheduling. The switch to bigger servers is necessary to provide performance, reliability and a single point of administration, observers said.

"Scalability, redundancy and reliability are big messaging issues. We have to find a way to solve the network systems management problem, and we certainly can't do that with DOS or Windows PCs," said John Gustafson, information technology specialist at 3M Corp.

The advantages that bigger servers have over PC servers - a capacity for larger databases, more memory, better performance and fault tolerance - are not unique to E-mail, but they can significantly enhance Email operation.

For instance, WordPerfect Corp. announced at Comdex/Fall '93 n version of its Office messaging software that works as a Novell. Inc. Net-Ware Loadable Module on Hewlett-Packard

of the RISC station can manage an estimated 500 users and 20 messages per second vs. 250 users per post office and one message per second on a DOS-based 486 computer, according to a WordPerfect engineer.

BellSouth Telecommunications, Inc. in Birmingham, Ala., found that Lotus Development Corp.'s DOS-based CC:Mail post office servers

#### The great divide

Observers said they expect the messaging-server market to divide into lower-end and higher-end servers, just as the router market did a few years ago. At the higher end are messaging servers for corporate backbones running on RISC-based machines, such as those from oftSwitch, HP and Digital.

At the lower end are upcoming messaging servers such as Lotus' Communication Server (LCS) and Microsoft Corp.'s Emterprise Messaging Server (EMS). The LCS, for example, will run on the major Unix operating systems, and the EMS will run on NT. However, analysts said these LAN servers will likely be Intel computers rather than RISC machines. That is because they expect the Lotus and Microsoft servers to be used in small to medium-size messaging network segments.

> can handle only a couple hundred users per server before speed performance dips below an acceptable level, according to Julie Ferris, a BellSouth strategic planner.

'One division's CC:Mail base went from 1,000 to 3,000 users, and the management issues they are dealing with now are almost killing them, she said. The issues include the technical and RISC, page 56



Toro's Steven P. Hansen: Rusiness users need. more access to information

tion equipment to mass merchants such as Wal-Mart Stores, Inc. and The Home Depot, Inc.

Now the \$684.3 million firm is building on those efforts with a strategic initiative to establish electronic commerce connections, including electronic data interchange (EDI) capabilities, with its customers, according to Steven P. Hansen, Toro's director of information services.

'For mass merchants, electronic commerce is an invaluable requirement," said Raymond E. Cabillot, a consumer products analyst at Piper Jaffray, Inc., a Minneapolis brokerage house.

"EDI is becoming more of a necessity because the larger companies like Toro don't want distributors calling them about price changes. They'd rather receive those changes in an electronic forgoods distribution management need to enable our business users to have much more access to information than they have now. Our inrevolutionary approach," Hansen

#### Apple makes Newton announcements

With 170,000 road warriors milling about Comdex/Fall '93, Apple Computer, Inc. thought it was time to announce a bevy of developments regarding its portable Newton MessagePad. They included the following:

▶A staged introduction of NewtonMail will commence immediately, with full commercial release in the next 60 days. A recently launched test pilot will be followed by a limited commercial release to Newton users who sent in response cards packaged with the MessagePad.

NewtonMail enables Newton users to exchange text messages with those on Compu-Serve, America OnLine, MCI Mail, AppleLink, SprintMail and EasyLink, as well as other online services accessible via the Internet. General availability will begin in early 1994. Fees will start at \$8.95 per month.

► The Newton Connection Kit for Windows began shipping last week. The application enables information to be exchanged between Windows-based PCs and the Newton MessagePad. The package costs \$165.

Also shipping is the Fax Modem Card, which allows users to communicate via NewtonMail and other on-line services and to send faxes anywhere. The retail price is expected to be

Apple also announced an agreement with Megahertz Corp. in Salt Lake City to produce a PCMCIA modem for the MessagePad. The modem will slide into the Newton's PCMCIA slot to give it fax capabilities.

►Also displayed was a new family of remote access products. The \$1,799 Apple Remote Access Multiport Server, \$249 Remote Access Personal Server and \$69 Remote Access Client allow users to access information and services over a variety of connections, ranging from telephone lines to cellular phone links. Apple will also deliver a remote access client for Windows early next year.

-James Daly

#### Net server speeds the answers to FAA planners

By Elisabeth Horwitt

Sometimes the simplest way is not the best way, as the Federal Aviation Administration's Aviation Capacity Branch has discovered.

The branch, residing at the FAA's Technical

Center in Atlantic City, uses an IBM 3090 mainframe to run complex simulations of airport traffic seenarios under a variety of conditions. The results of those simulations are fodder for a series of comprehensive studies that analyze current airport and airspace

Airport management and commissions also use them to plan for aircraft capacity and flight volume in the future. The studies factor into account every conceivable factor and condition and take between six months and two years to complete.

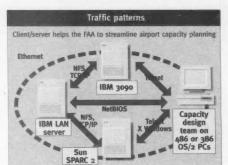
However, staff productivity was

suffering because of a traffic bottleneck created by the 2.4K bit/sec. modem links between the center staff's PCs and the mainframe, according to Andy Lamb, computer specialist at the Technical Center

#### Paper chase

The staff would end up poring over a printout of the simulation's results, which would use between three pages and a whole box of printout paper, depending on the simulation program. how long the simulation was running and what printer options were available, Lamb said. They would then have to manually reenter the data into a PC-based spreadsheet program for analysis, Lamb said. This method was time-

The original plan for addressing the situation was to get a faster modem: say 9.6K bit/sec. However, this would only provide a slight throughput improvement and did not address the printout and manual input limitations.



Instead, the center set up an IBM LAN Server on OS/2 that communicates with the mainframe and with a Sun Microsystems, Inc. SPARC 2 workstation, using Sun's Network File System (NFS). Users can copy files from the mainframe to their own PCs or to the Sun system across drives on the LAN Server. They can also use the X Window System to view graphics scenarios on the SPARC 2. All of the systems are connected via TCP/IP over a 10M bit/sec. Ethernet with network interface cards supplied by CNet Technology, Inc. in San Jose, Calif., and 3Com Corp. in Santa Clara, Calif.

Under the new system, users can create simulation input files on a server drive then tell the mainframe, over a TCP/IP Telnet link, to access those files and run the simulation. The output files of the simulation, which typically are about 2M bytes, can then be downloaded to the LAN Server via NFS over Ethernet in about 20 seconds, compared with the two hours it took over the 2.4K bit/sec. modem link, Lamb said.

Users can copy the files from the mainframe's M drive to the Sun workstation's N drive on the LAN Server then use the Telnet link to the Sun workstation to "fire up a graphic simulation" and view it over an X Window connection, Lamb said. The simulation is animated, showing airplanes taking off, landing and taxiing to the gate, he added.

#### From an hour to 30 seconds

Furthermore, rather than getting a whole printout of the simulation results, the user can copy the relevant pieces directly to a Lotus Development Corp. 1-2-3 spreadsheet, Lamb said. This reduces the time it takes to load the numbers from an hour manually to about half a minute electronically, he added.

The Aviation Capacity Branch has also upgraded its users from 386-based PCs with 4M bytes of RAM to 486-based PCs with 16M bytes of RAM. In addition, the center installed Lotus 1-2-3 on the Sun workstation so that if users spreadsheets overload their local PCs, they can copy and paste the spreadsheet from their workstations to the Sun system in an X Windows system then run the program on the SPARC 2, with its 128M bytes of RAM, Lamb

The end result, Lamb said, is that the capacity teams will be more responsive and accurate in the reports they send to the FAA Capacity Office in Washington and to airports under study. We suggest alternatives; it's up to the airports what to do," he noted.

Sys-



**Federal Aviation** Administration Atlantic City, N.I.

Challenge: To find a more efficient, less error prone way for airport capacity design team members to download and analyze the results of air traffic simulations.

Technology: Cabletron Systems, Inc. hubs, IBM LAN Server, OS/2 work stations, Sun SPARC a graphics workstation, TCP/IP, Telnet and Sun's NFS communications protocols.

Results: Cut total time for downloading simulation results from hours to seconds; eliminated manual reentry as a potential source of error



Massively parallel processors

#### Clustering takes stage at supercomputer show

By Ellis Booker

While massively parallel processing (MPP) machines are gaining respectability as commercial computing platforms, advances are quickly being made in the science of logically configuring powerful workstations across extremely high-speed LANs.

IBM. Hewlett-Packard Co., Digital Equipment Corp., Silicon Graphics, Inc. and others demonstrated this "cluster" approach to parallel computing at the recent Supercomputing '93 show in Portland, Ore.

Although clustering is appealing because it promises a scalable way to do parallel processing with existing hardware resources. MPP vendors pointed out it is limited principally by two factors: The available speeds of LANs and the "latency" problem, which refers to the idle time one processor spends waiting for an instruction or a piece of data to be delivered from another.

One exception among the MPP naysayers is John M. Harte, president of supercomputer company MasPar Computer Corp. in Sunnyvale, Calif. Harte would not dismiss the competitive threat and said clusters would indeed be suitable for some kinds of highperformance parallel computing. "For general-purpose jobs," he said, "MPP vill run head on into the buzz saw of 200-MHz workstations connected by ATM networks."

Asynchronous Transfer Mode (ATM) was, in fact, the hot networking topic.

#### **Booth displays**

Arguably ahead on the clustering curve are partners Convex Computer Corp. and HP. They have announced hybrid systems for HP Apollo 9000 workstations linked to Convex supercomputers, and

HP's cluster product runs specialized software developed by Convex. HP's booth featured four HP 9000s linked via a Fiber Channel Extended Industry Standard Architecture adapter board running a parallel application.

Also at the show, Convex announced a software environment and MPP development tools for its Exemplar scalable parallel processing system. Convex said the environment, which has a scalable operating system that is binary compatible with HP/UX, will ease the porting of off-the-shelf and custom applications to its supercomputers, which use HP's PA-RISC technology.

"The

thing happening out **ATM** trial there is that people are recognizing that possibilities of ATM. legacy systems are Scinet, the show floor out of gas," said Paul data network at Koontz, director of Supercomputing '93, marketing at the Suused ATM as its percomputer backbone for the tems Division of Silifirst time. con Graphics, Inc. in Mountain View, Calif.

> On the other hand. nagging migration issues remain. Or as James R. Kasdorf, director of supercomputing at Westinghouse Electric Corp. in Pittsburgh, framed the problem: "Phase one is your legacy mainframe running Cobol. Phase three is an MPP running an object-oriented relaticnal database. Phase two ... a mir-

#### RISC

CONTINUED FROM PAGE 55

administrative headaches of setting up mail and address list exchanges among many small post offices and losing messages because of the inability to track mail across so many

To avoid these problems in the future, Bell-South has chosen an X.400 messaging platform based on HP's HP 9000 workstations and HP's OpenMail messaging software. It gives the company a scalable messaging backbone with centralized address and messages stores and management capabilities [CW, Nov. 25].

#### Faster migration

According to Terrence McCarthy, managing director at Neoteric, Inc., a messaging and workflow systems integrator in New York, users are moving much more quickly to RISC than expected, due in part to the increasing popularity of X.400-based messaging servers on RISC boxes from SoftSwitch, Inc., HP and Digital Equipment Corp.

"If you are using messaging as a critical service on which other services reply, you don't want that to go down. So in the same way you see these bulletproof machines used as file servers, you'll see them used as messaging servers," said Mary Petrosky, an analyst at The Burton Group's San Mateo, Calif., office.

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## Newspapers to go digital

Two major papers are taking the black smudge out of the daily news.

Some of the news that is fit to print will soon be available electronically from The New York Times and The Washington Post. The Times said recently it will work with Nynex Corp. to develop an interactive fax service that will send news and other information to subscribers at times and places selected by users.

The prototype service will employ store-and-forward technology.

The service will give subscribers the opportunity to receive articles on topics of personal interest, no matter where they happen to be at the time," said James A. Cutie, president of The New York Times Co.'s Information Services Group. About 1,000 customers will participate in the market test next spring, the Times said.

The Times and Nynex said they will work with fax equipment providers to develop the service and to develop a low-cost fax printer for home use.

The Washington Post Co. announced it was establishing Digital Ink Co., a subsidiary that will bring the Post to subscribers via fax, computer and telephone. One of the first offerings will be an online version of the Post, scheduled for debut next July. This will allow subscribers to communicate with one another and with newspaper staffers via electronic mail, according to the Post.

#### **Electronic choices**

The Post will roll out other electronic products based on its editorial pages and information from affiliated businesses such as Newsweek magazine, the company's broadcast and cable divisions and its Legi-Slate government information database service.

The products will combine text, graphics, photographs, moving pictures and sound. They will be available via computer, cable television and wireless communications devices, according to the

#### Briefs

#### **Nextel gains Motorola licenses**

Nextel Communications, Inc., a radio dispatch company with plans for broader services and markets, recently acquired more than 2,500 specialized mobile radio licenses in 21 states from Motorola, Inc. for \$1.6 billion in stock. Nextel plans to combine the local Motorola systems with others it already owns to create a digital network for voice, data and paging services.

#### AT&T, Mead Data unveil news service

AT&T Easylink Services and Mead Data Central, Inc., owner of the Nexis information service, have introduced a service that filters and transmits new stories to electronic-mail boxes or fax machines. The Pubcite service drops an electronic table of contents from one of more than a dozen general interest and technology trade publications into a subscriber's AT&T Mail E-mail box. Users pay an annual \$26 subscription fee per publication and a \$4.75 charge for each article they order.

#### Companies enter ATM market

Standard Microsystems Corp. and Newbridge Networks have teamed to develop Asynchronous Transfer Mode (ATM) products. Both companies can enter the ATM adapter, workgroup and enterprise switch markets with their own products

#### FCC cites toll fraud liabilities

The Federal Communications Commission has proposed a comprehensive review of private branch exchange (PBX) and telephone toll fraud policies that holds customers liable for losses. Commission members suggested that manufacturers and carriers have an obligation to provide more information to customers about the possibility of toll fraud, which caused an estimated \$4 billion in losses last year.

#### ATM specs and trials emerge

Belicore, the research arm of the seven regional Bell operating companies (RBOC), has issued requirements documents for the RBOCs' deployment of ATM permanent virtual circuit services. Permanent virtual circuits require users to know with whom they will be communicating in advance and "nail up" communications links with those sites. Subsequent switched virtual circuits will allow customers to communicate with others on the fly.

#### Superhighway ethics

More than 70 public interest groups formed the Telecommunications Policy Roundtable, a coalition devoted to ensuring universal access to the digital "information superhighway." Focusing on issue such as privacy, electronic democracy and affordable use by disadvantaged groups, the coalition hopes to balance the commercial interests embodied in recent media megadeals.

#### **NetView association gels**

IBM and Digital Equipment Corp. said they have completed combining their organizations for recruiting and certifying network and systems management application vendors into a single NetView Association.

#### **Embarc welcomes PDAs**

Motorola's Embarc paging network has added support for three personal digital assistants: the Tandy Z-PDA, Casjo Z-700 and the Grid 2390. This means users of these devices who subscribe to Embarc can receive one-way electronic mail and various information services via the Embarc network.

#### Lawnmower maker

CONTINUED FROM PAGE 55

mary retailers. "Major logistical changes were needed to support mass merchandiser requirements like quick response," Hansen said.

Until 1991, Toro had served all of its North American distributors from one warehouse in Lakeville, Minn. But additional distribution channels for Toro products accelerated the company's need to set up satellite warehouses.

Toro programmers wrote the original EDI application in 1987. Now they are reworking that package to help Toro serve its wider distribution channels. Toro retailers have used the EDI system for parts ordering, but it was developed before EDI standards such as

#### Speedy turnaround

The existing EDI system will be amended to include features such as invoices for parts replacement, which is currently paper-based. Hansen said invoices that have historically taken four to five days to turn around with customers will be processed overnight once the features are added to the EDI system.

The Toro-developed features will be aided by translation software called Gentran from Sterling Software, Inc. Hansen said Toro has committed \$800,000 to the electronic commerce projects, with \$500,000 to be earmarked for each of the next few years

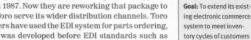
Toro's retailers are connected to the proprietary

electronic commerce system via modem connections, Hansen said. He added that 75% of the company's orders are routed to them electronically. And as Toro

adds EDI standards to the system, Hansen said he expects the company to expand its ability to send outbound invoices to retailers. Only a fraction of those are handled on-line today. Sterling also provides Toro with EDI transmission through its Ordernet service.

Hansen said the project is being overseen by an EDI executive review board, which includes the general managers of Toro's divisional business units. "Getting input from top management throughout the company is essential to the success of the project so that we're all on the same page in terms of making sure the system requirements are met," Hansen said.

He said the electronic commerce initiative is not intended to save costs but rather to improve Toro's service and responsiveness to its customers.



the ANSI X.12 standard had matured.

Microdyne Corp. has unveiled the 3270 Workstation for Windows SNA Gateway, a Windows-compatible IBM 3270 emulator.

According to the Alexandria, Va., company, the product is a member of the SAA Solution family of hardware and software products for Novell, Inc.'s NetWare-based networks operating under IBM's Systems Application Architecture

An object-oriented configuration utility that includes all the elements needed to set up a host session is provided.

A single-user license costs \$395; a gateway license

is priced at \$6,995, the company said.

**▶**Microdyne (703) 739-0500

The Toro Co.

such as Wal-Mart.

Technology: Amdahl

5890-300E mainframe;

Sterling Gentran transla-

tion software: IBM CICS

and IMS batch applica-

Anticipated benefits:

Hundreds of thousands

of annual paper invoices

replaced by EDI connec-

#### Product short

Socket Communications, Inc. has introduced Page-Card, a dual-mode wireless messaging device. Page-Card combines a stand-alone LCD alphanumeric pager with a universal PCMCIA interface and can be used for automated business messaging. It interfaces seamlessly with electronic-mail, scheduling, spreadsheet and word processing software when used with send/receive messaging software for Windows, Cost: under \$495. Socket Communications, Hayward, Calif. (510) 670-0300.



# YOU KNOW HOW SOME THINGS ALWAYS LOOK GOOD FROM A DISTANCE?

As anyone who's ever been in the desert can tell you, things aren't always as they appear. Whether it's

business data through integrated software. When,

an oasis in the sand. Or a suite of application software in the office.

Unless vou look verv closely, for example, you'd swear Microsoft® Office was a revolutionary new way to use, manipulate and share

LOTUS SMARTSUITE 2.1 VS MICROSOFT OFFICE PRO COUPON FOR EXCEL 5.0 1-2-3° RELEASE 4 FREELANCE GRAPHICS® 2.01 APPROACH® 2.1 COUPON FOR POWERPOINT® 4.0 ACCESS COUPON FOR 1 SEAT OF MICROSOFT MAIL INTEGRATION LOTUS APPLICATION MANAGER MICROSOFT OFFICE MANAGER COLLECT & COPY DDE, OLE DDE, OLE (2.0 IN WORD) SEMI-CONSISTENT USER INTERFACE CONSISTENT USER INTERFACE WORKGROUP ALL APPS MAIL-ENABLED ALL APPS MAIL-ENABLED VERSION MANAGER" SCENARIO MANAGER

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usable applications. All of which truly complete the desktop of every Windows™ user.

And while Microsoft claims Office is going to fully maximize cross-product integration and consistency, Lotus is already way down the road to achieving precisely that across all five applications. Sharing the

same user interface. With common menus. And

MAYBE YOU'D BETT LOOK AT MICROSOF

in reality, Lotus® SmartSuite® achieved that distinction over a vear ago.

A closer inspection will also demonstrate that not all of Microsoft Office's five applications are designed for general business users. And some new versions aren't vet available at all. Lotus SmartSuite, on the other hand. has five of the leading, award-winning, most SmartIcons.® To say nothing of task-oriented

functions that cross applications. Collect and Copy for instance. With a single click, it lets users gather data from 1-2-3° and Freelance Graphics® and combine it into an Ami Pro® word processing document.

Of course, you might be just as easily deluded into believing that Microsoft Office is work-



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it can be revised stored and accessed concurrently

by multiple users working in collaboration.

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# These days, the complexity of managing multiple databases has database

administrators running in circles. But now you can take a giant step toward bringing all that complexity under control.

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The DataHub product family from IBM Software Solutions offers a powerful new way to handle systems management across IBM relational databases - DB2, SQL/DS on VM/ESA, OS/400 database manager, OS/2 Database Manager and DB2/2." And coming soon, support for DB2/6000."

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Vendors such as PLATINUM technology, Candle, LEGENT, Bridge, InfoTel and PROGRAMART are staying afoot with DataHub's direction, letting you integrate a variety of database management tools. You can also develop your own application-based tools for DataHub's platform of common services.

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### Client/server gains more tools

By Kim S. Nash

A lack of systems management tools designed to minister to client/server systems has kept some users from putting such schemes into production. However, relational database makers have begun to address the problem by teaming up with historically mainframe-oriented utilities firms such as BMC Software, Inc. and Legent Corp.

Oracle Corp., for example, has promised to release programming information about the Oracle 7 database to several utilities makers, which will build or port versions of existing performance monitoring, capacity planning and other tools to Oracle. The ASK Group, Inc. has said it is seeking similar deals for its Ingres database.

Sybase, Inc., meanwhile, has been working with Tivoli Systems, Inc. since 1991 to develop a framework for client/server management tools that would rival mainframe cousins in functionality. And Informix Software, Inc. outlined client/server management plans last week.

Although database/utility couplings are not expected to bear fruit until mid- to late 1994, observers are enthusiastic that database companies are stepping up to the systems management plate.

Other client/server advocates, including applications makers such as PeopleSoft, Inc. and IMRS, Inc., have shrunk into the background when performance monitoring, capacity planing and other management and administration topics arise, said Paul Cubbage, an analyst at Dataquest, Inc. in San Jose, Calif.

The fact that database makers are taking at least some responsibility for making client/server more workable "is progress," Cubbage said.

For now, some users are relying on relational databases themselves, coupled with savvy database administrators, for effective perfor-Tools, page 68

**Minicomputers** 

# HP responds to user requests on 3000 line

By Mark Halper PALO ALTO, CALIF

Three weeks after raising a few eyebrows over its long-term proprietary minicomputer commitment, Hewlett-Packard Co. has ameliorated user concerns by outlining a solid dedication to the box and its MPE/IX operating system.

The company told HP 3000 users in n private broadcast on Nov. 18 that its next-generation MPE/IX — Version 5.0 — will be available in May and will include a number of user-requested features, according to Eric Fisher, principal at Fisher Systems Consulting in Groton, Mass.

Furthermore, HP said it will today add a dual-processor machine to the midrange of its HP 3000 line and will offer users a board upgrade to that box, called the Series 987/200, for a third the price of the system. The company priced a 100-user version with 64M bytes of memory, 1G byte of storage and four I/O slots at \$188,320.

An HP spokesman confirmed that HP will ship MPE/IX 5.0 in the spring but declined to commit to a month.

In one warmly received move, HP told users that 5.0 will return to backup procedures built into MPE/IX 4.0. HP had set off a ruckus when it switched to backup procedures with the intervening Release 4.5, leading 4.5's few users to complain about storage and backup difficulties [CW, April 12].

"There was such a huge cry from the users saying 'Don't

HP, page 66

Up and down

| ٨                   | Major database makers aligning<br>management firms to build of<br>administration too          | client/server                        |  |
|---------------------|---|--------------------------------------|--|
| VENDOR              | PARTNERS  | EXPECTED JOINT PRODUCT AVAILABILITY  |  |
| Oracle              | BMC Software, EcoSystems,<br>Epoch Systems, Legato,<br>Legent, OpenVision, Patrol<br>Software | Mid-1994                             |  |
| Sybase              | Tivoli, Epoch Systems   | Some out now;<br>others due mid-1994 |  |
| Informix            | Outlined plans include HP,<br>OSF and OpenVision  | Mid-to late 1994                     |  |
| The<br>ASK<br>Group | Details due early 1994;<br>expected to include BMC<br>Software and Legent                     | April 1994                           |  |

# ASK enhances Ingres database

First in line

ASK signed four joint

development and

marketing agreements

Microsystems, Inc.,

ASK products to be

available on Unix

systems from Sun

before machines from

other Unix vendors.

e of which calls for

By Kim S. Nash

■ Users and analysts applauded The ASK Group, Inc.'s object-oriented and connectivity enhancements to its Ingres database announced earlier this month, saying the new features will be useful in moving applications off mainframes to a client/server setup.

The follow-on to Ingres 6.4—renamed Open-Ingres—is expected to include additional gateways to help Unix users get at data housed in IBM mainframes, support for Open Database Connectivity (ODBC) standards and a distributed transaction processing monitor, the company said. The products are slated to ship in April 1994 [CW, Nov. 15].

"The biggest news here is that ASK is showing they fully support the Ingres side of their business. They're not going to let it flounder," said David McGoveran, president of Alternative Technologies in Boulder Creek, Calif.

The Ingres database and add-on tools sport strong technology but have lacked a powerful marketing organization to back the products, McGoveran said, echoing statements from users and other analysts.

OpenIngres and accompanying products should relieve Ingres users who may have been concerned that the Ingres database wus falling behind competitors such as Oracle Corp. and Sybase, Inc., added Paul Cubbage, an analyst at Dataquest, Inc. in San Jose, Calif.

Ingres holds 12.5% of a \$1.4 billion worldwide relational database market, compared with larger chunks for rivals (see chart). Further, while Sybase and Informix have gained ground at Oracle's expense, Ingres' share has been unchanged, according to Bill Shattuck, an analyst at Montgomery Securities in San Francisco.

However, Ingres has been strong in Europe, a phenomenon the company seeks to transport to North America via a

streamlined sales, marketing and support organization put in place this year. Where ASK formerly had separate sales, marketing and support groups for each product line—tools, applications and database—the company now has one unified group serving all the branches.

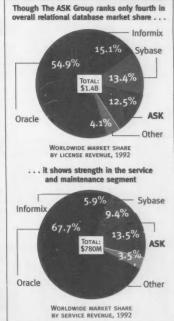
Also part of OpenIngres is a gateway to IBM CICS/VSAM systems and a database replicator announced in June and due to ship this month.

#### New customers?

OpenIngres should spark new interest in the product line, especially as companies seek to tie legacy data housed on mainframes to Unix systems, said John Van Den Hoven, manager for database and enterprise information systems at Noranda, Inc. The Toronto-based con-

glomerate started moving financial, human resource, materials management and other large applications off mainframes to Hewlett-Packard Co. HP 9000 Unix-based servers and workstations running the Ingres database.

Van Den Hoven said he sees "a lot of potential uses" for the Ingres Replicator, which copies and synchronizes data in separate databases in remote sites. Gathering data such as employee vital statistics from several decentralized divisions could be made easier with Replicator, he said.



ource: Montgomery Securities, San Francisco

#### Number of TPC-C Benchmarks\* Published to Date.

TPC-C benchmarks emulate a complex OLTP environment characterized by:

- · multiple on-line terminal sessions
- significant disk input/output
- moderate system/application execution
- transaction integrity
- simultaneous execution of multiple transactions
- · multiple transactions with a range of complexity
- complex database
- · contention on data access and update

Hardware vendors that have used INFORMIX-OnLine to publish TPC-C benchmarks include: Hewlett-Packard, IBM, ICL and NCR.

\*UNIX TPC-audited benchmarks published by hardware manufacturers as of 11/1/93.



Informix

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**Sybase** 

Source: Transaction Processing Performance Council (TPC), 1993.

When the Transaction Processing Performance Council designed the new TPC-C benchmarks, they had a real-world performance test in mind. Unlike earlier, simpler TPC benchmarks, TPC-C mirrors transaction-intensive business applications that run a company's day-to-day operations—like yours.

#### Hardware Vendors Choose INFORMIX-OnLine.

This kind of complex, real-world benchmark requires a high-performance relational database. Which is why hardware vendors running TPC-C are using INFORMIX-OnLine. And of all the leading independent relational database servers only INFORMIX-OnLine is being used by hardware vendors to publish TPC-C results. Not Oracle. Not Sybase.

#### Why INFORMIX-OnLine?

INFORMIX-OnLine is engineered for real-world performance. It's fully scalable—from relatively small-size systems to systems running the largest (over 100 gigabytes) UNIX databases in the world. And it incorporates standards-based technology to provide triggers, two-phase commit, data and referential integrity, backup and recovery, TP/XA support, and a host of other features essential for developing and

deploying applications throughout a company's operations.

Add to OnLine the most integrated set of application development tools from any leading RDBMS vendor and you've got an unbeatable combination.

If you're unsure about what benchmark numbers are telling you, take a look at the Transaction Processing Per-

"TPC-C benchmark's key advantage is a very close emulation of actual user workloads. It has the complexity that real OLTP programs exhibit. Our test results show Informix to be an excel-

- Hewlett-Packard

"TPC-C provides the industry with a significant new complex,

-Transaction Processing Performance Council

"... the TPC-C benchmark accurately resembles hundreds of customer applications Aberdeen has observed over the years. For that reason, Aberdeen believes TPC-C is the best-yet benchmark

technology for predicting real-world application performance of total systems in most real-world IS production environments.."

-The Aberdeen Group, August 12, 1993

strenuous OLTP benchmark for measuring computer system

performance in a business environment."

lent vehicle for developing high-performance transaction

processing applications.

formance Council's TPC-C specification. And then take a look at INFORMIX-OnLine. Because in the only independent benchmark designed to show representative, realworld results, INFORMIX-OnLine is the database of choice.

### choice. Free Aberdeen Group

#### Report.

Find out more about TPC benchmarking and Informix

in the new Aberdeen Group Report, "Commercial Benchmarks 1993: As Easy as TPC-A, -B, -C." Call us at 1-800-688-IFMX, ext. 12 or send in the reply card and we'll send the report to you—free of charge.



#### Ted Krum

### Get bargains, give up service



An upscale department store with lavish interiors and attentive staff can't make money selling \$5 plastic housewares. Low-priced products sell in plenty, but they require less expensive sales channels and service policies to be profitable.

This principle applies just as well to computer systems, and it suggests some hard adjustments ahead for large system customers.

Base prices of large and midrange open systems have fallen to a fraction of their mid-1980s levels for familiar reasons: standardization, adoption of low-cost PC technology and dramatic advances in processor design. Competitive pressure from open systems has backed proprietary systems into the sume corner, forcing vendors to slash the exorbitant premiums (five times or more those of just a couple of years ago) that they charged for hardware, software and service.

Today, Hewlett-Packard and Digital offer proprietary product lines priced near parity with their Unix systems on a price/performance basis. The AS/400 may be next, cutting even more deeply into IBM's lucrative commercial business.

#### Lost support

As vendors adapt to their bargain-basement pricing environment, IS managers face diminishing pre- and post-sales support. Of course you save on the front end and in many cases from downsizing moves as well, but if the out-of-pocket costs for installing, integrating and supporting new hardware double and triple, those savings will quickly vanish.

Minicomputer and database server customers can expect the same changes PC buyers started to experience six or seven years ago. Vendors will target smaller direct sales forces and support teams at the largest national accounts, leaving smaller customers to resellers.

It seems unlikely that we will ever be able to buy a VAX at everyday low prices at Sears. Still, Sun now has a mail-order catalog for low-margin expansion products and HP is distributing workstations through specialty retailers such as Intelligent Electronics. Customers can even order Silicon Graphics Indigos over an 800 number.

These cut-rate approaches have met with same success because traditional workstation customers can install and maintain their own systems. But larger systems aren't so easy, and the user population isn't as technical. Corporate users need more service, and service means head count.

Right now, a department of 250 people might require only one mainframe operator, but that presupposes the operator has access to vendor staff for installation, preventive maintenance and system software support. PC LAN administrators might be able to serve one-third as many users and couldn't pay their vendor enough to assist them on site.

The result is that today's network administrators are more highly skilled, have more job mobility and demand bigger salaries (up 5.4% last year) than mainframe/mini managers (up 3.2%).

Staffing up to handle chores the vendors used to perform isn't a happy prospect, but it might be preferable to paying proprietary systems vendors for access to their staff for a couple of reasons. First, these vendors may not really want or be able to handle the business anymore. And second, companies that go in for service revenues may have such poor profitability that they won't be able to offer the latest technology.

 $Krum \ is \ u \ senior \ research \ analyst \ ut \ RCB \ International \ in \ Stamford, \\ Conn. \ He \ can \ be \ reached \ by \ E-mail \ at \ Tedkrum@aol.com.$ 

### Talking computers take on tougher tasks

By Johanna Ambrosio

■ Talking computers are not just the stuff of science fiction movies. In fact, some data centers are using voice technology for tasks ranging from operating the help desk to broadcasting system outages.

"It's available and very effective," said Arnold Farber, president of consulting firm Farber-LaChance in Richmond, Va. "Voice is a very natural interface, and I think we'll

be doing even more with

However, Farber and users warned, it is not necessarily a no-brainer to implement. "It takes a little while to get the development process down. But once you learn it, it really helps improve utilization of the system."

Most of these systems attach to the mainframe through a PC or some other means. Through these, help desk operators, data center employees and others are able to "hear" what is going on inside the machine.

Canadian Tire Corp. in Toronto uses InterVoice, Inc.'s systems to assist the help desk in responding more quickly to end-user requests to help automatically change or reset user IDs or restore printer operations. It also allows Canadian Tire to broadcast general systems news.

"It frees up help desk operators to do analysis and problem-solving," said Diane Miller, manager of service quality. A menu guides users through the selection process and allows them to opt to speak to a human operator.

It has been a learning experience. "We thought we would start off with a nice easy application, user IDs. Little did we know," Miller said. That process did not prove to be simple to automate. "We hit a brick wall because the options we had to automate with turned out not to be easy for the customer. You have to know the customer, what their limitations are and whether it will be easy for them to use."

Still, it can be worth the effort. Leah Larson at Computer Sciences Corp. in Fort Worth, Texas, programmed the voice-response unit for the help desk.

"We've automated 35% of our calls. That may not seem like a lot, but we are accomplishing more with less. We've had to increase our staff less than what we would have had to based on the number of calls we handle."

AT&T's western data center uses a speech-synthesis device to translate the text messages going across a giant console in the command center into speech. "That seemed pretty good at the time," said Rick

Reynolds, a senior programmer who handles technical planning at

AT&T in Pleasanton, Calif.
"So now you've got a sound and you can turn around to see what's going on."

going on."
Unfortunately, he said, the choice of five voices with the unit was not sufficient.
None were really understandable. "We call the one we wound up with "Sven,"" Reynolds said. "It's got a thick Swedish accent, and even with the

bass turned way off on the stereo system you can't understand it all the time."

If the voice unit is being used to broadcast system outages in the data center, it is important that implementors carefully pick and choose the amount, length and type of messages that are broadcast. "If you keep saying something over and over again, people stop paying attention," said Julie Hawkes, manager of VM systems support and automation at Rolm Corp. in Santa Clara, Calif. "It's human nature."

Rolm solved this problem with a system called Commensa from Votek that allows users to broadcast different messages to different places. "The console room wants to know systems status, but the help desk doesn't care about tape mounts," Hawkes said. "You have to think about what kinds of announcements you want to make." She said it may be very effective to use managers' voices for some announcements. Other options include sounds like train wrecks or car crashes to signal a major system outage.

Another use of voice technology is to attach the mainframe to some kind of paging system that automatically dials the on-call person as soon as a batch program abends.

#### HP

#### CONTINUED FROM PAGE 63

do that,' they made the change," noted Jerry Kopecky, manager of MIS operations at IVI Travel, Inc. in Northbrook, Ill. "They listened to their users."

Other enhancements included in 5.0 are support for 2,700 users, support for Microsoft Corp.'s Object Database Connectivity, fast and wide SCSI, 86-byte tape drive support and built-in Posix training.

But while users lauded HP for the planned MPE/IX improvements, the broadcast's most poignant pronouncement came in regard to longer-term plans.

"I have never heard this before, but when people were asking what is beyond Release 5, the HP people said absolutely, positively, they're working with Interex [an HP user group] and customers on systems improvements," Fisher said. "Is there life after 5.0? Absolutely."

While HP constantly expresses support for the 3000, loyal users are painfully aware that Unix is, af-

ter all, the higher-growth sector. HP often adds power to its HP 9000 Unix minicomputers before making companion moves to the 3000.

Today's 987/200 unveiling comes five months after HP added a similar machine to the 9000 line.

And earlier this month, when HP unfurled its topof-the-line mainframe alternative minicomputers, it topped off the 3000 Edition at eight processors while pushing the 9000 to 12, rekindling some concerns among 3000 users sensing abandonment.

HP said the HP 3000, with its more robust MPE/IX operating system, is a more powerful system requiring fewer processors than the HP 9000 with HP/UX.

Users said they are confident in HP's commitment.
"If long term means 20 years, I don't see it," Kopecky said. "But if long-term is five to eight years, I'm

satisfied I'll have a 3000 in the long term."

What users are less certain about is how long HP will continue to offer MPE/IX and HP/UX as two separate operating systems. MPE/IX, with its Posix compliance, is moving more into the Unix world, although

it is a higher-performance operating system without

all of HP/UX's openness.







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# The 30-minute risk analysis

In the time it takes you to gobble a turkey sandwich at lunch, Don Erwin can pinpoint the security holes in your system.

Erwin, a security analyst at Dow Chemical Canada, Inc., has helped develop a way to take the terror out of systems risk analysis, which is often perceived as a lengthy, expensive affair that outside consultants perform with minimal employee contact.

The result is that you've got a bunch of end users who don't understand or want the recommended controls and who are lax on following up on the recommendations,' Erwin said.

He and his coworkers in the Midland, Mich., offices have created the Risk Analysis Matrix to develop a subjective risk assessment and action plan. The matrix is cheap, created by end users and can be completed in minutes.

No way, you say.

Erwin would disagree. The Risk Analysis Matrix is not only a staple of Dow's security program, he thinks it should be a cornerstone of yours. "A lot of systems managers find security to be a daunting proposition and don't know where to start," Erwin says.

Security consultants have praised the Dow plan for its ability to provide perspective. "Security consultants sometimes give the mistaken impression that you have to go for the big solution when in fact you can take smaller concrete steps that can have a very desirable effect," said Andrew Wolfe, a principal at the Lipa Strategic Technologies consulting firm in Salem, Mass. "Companies need to empower themselves, not count on someone else to do it."

The Risk Analysis Matrix is essentially a grid question-andanswer chart that lets users home in on what needs protecting. Erwin first classifies undesirable events in terms of their effect on data. On the grid's vertical axis he creates three columns that pertain to security objectives: data integrity (unauthorized modification or destruction of data); data sensitivity (unauthorized disclosure of data); and data availability (unavailability of data or system services).

The horizontal axis pinpoints what he is trying to protect the data against. There are two choices: accidental acts (such as an error or omission) and deliberate acts (such as a hacker or employee fraud).

Erwin then assembles employees with expertise in the department you need to protect. For example, if Dow wants to install a LAN at a regional sales office, Erwin would invite someone from sales, a LAN technician and maybe someone from the office's clerical staff.

He quickly sketches out the matrix on an overhead or flip chart and asks each participant to think about the risks as sociated with each square in the matrix.

"For instance, I'll ask them to come up with things that could happen because, say, data was accidentally modified by someone on staff," he says. "There are no right or wrong answers. Contributors must not feel intimidated in voicing

Dow Chemical's 30-minute security analysis involves using matrices to identify, rate and suggest solutions for problem

|                 |  | Secutivity                | Availability                  |             |
|-----------------|--|---------------------------|-------------------------------|-------------|
| SCI             | Major concern                              | Confidential              | Vital                         | (emo        |
| Accidental acts | or   | or                        | or                            | error and   |
| Accid           | minor concern                              | nonconfidential           | nonvital                      | omission    |
| sche            | Major concern                              | Confidential              | Vital                         | (fra)       |
|                 | 10   | or                        | or                            | ud and      |
| Deliberate      | minor concern                              | nonconfidential           | nonvital                      | and misuse) |
|                 | Modification or destruction of information | Disclosure of information | Unavailability of information |             |

|                 | integrity   | Sensitivity  | Availability  |                      |  |
|-----------------|---|--|---|----------------------|--|
| Accidental acts | Let (machine)<br>Desk checking<br>Checks and balances | Form classification<br>Access control<br>Segregation<br>Physical security    | Backup<br>System design<br>Duplication  | (error and omission) |  |
| Deliberate acts | Passwords<br>Sign-ons<br>Audit                        | Passwords<br>Sign-on<br>Waste disposal<br>Storage processes<br>Site security | Off-site storage Disaster plan Physical security Emergency procedures Security specifications | (fraud and misuse)   |  |

: The Dow Chemical Co., Midland, Mich.

The process is repeated for each of the other squares (harming the integrity of data because of deliberate acts, unauthorized disclosure of data as a result of an employee accidental act, etc.) until the chart is complete.

Participants then come up with controls that would address each of the security holes. Example: Sensitive documents might need to be shredded to guard against dumpster diving. Or a tape backup system may need to be developed in case the main server is accidentally fried by electricians working on the building's wiring system. Some controls may patch several holes at once, Erwin said.

Team members are then assigned responsibilities to implement the various controls. Because the end users choose the controls, there is a greater chance of their being accepted and implemented, Erwin said.

It is then up to management to decide if the costs to prevent these risks are higher than the risks themselves. "But at least you have taken the first move toward getting your arms around the problem," Erwin said.

#### Client/server tools

**CONTINUED FROM PAGE 63** 

mance tuning, backup and recovery and other management tasks commonly handled by discrete tools in mainframe scenarios

The World Cup '94 is constructing a large client/server system to handle press and attendee queries over a wide-area network stretching across nine time zones. The system was designed to funnel and respond to requests from

Much of the systems monitoring and management has so far been done using features of Sybase's System 10 database and add-on tools, according to Bud Bensick, a vice president at Electronic Data Systems Corp., which is handling systems integration for The World Cup.

At a conference in Cupertino, Calif., last month, dubbed Software Independence, executives from Sybase and Oracle as well as Tandem Computers, Inc. and Novell, Inc. talked about systems management plans and how to make software more open and easier to man-

However, users and analysts who questioned the vendors seemed frustrated by a lack of product specifics. One user noted that when all was said and not done, it is still the user's onus to get systems from different vendors talking to one another. Partnerships among database companies and systems utilities firms are an attempt to quell that sentiment (see chart page 63).

Vendors frequently blame one another when a user calls in with problems, according to Brian Sommer, an analyst at Andersen Consulting. "It's the 'who do you shoot?' problem," he said.

#### Who's to blame?

By definition, client/server computing calls for pulling together hardware and software from various vendors. When glitches occur - a network goes down, a database crashes — users have a tough time getting help unless they can pigeonhole the problem to a specific product, he explained. "Everyone seems to know [client/server systems management] is a problem, but there's a lot of finger-pointing going on."

"I don't have a good answer" to the systems management question, said David Cochran, technical coordinator of architecture at Atlanta-based Delta Air Lines.

Luckily, Cochran does not need an answer now because the airline is still in the prototyping phase for many of the mission-critical client/server systems planned, he said. Delta is using Sybase's System 10 database products to anchor its efforts, which include internal corporate applications such as human resources and external airport systems such as gate agent information.

Cochran said he will watch Sybase for systems management products in the coming year.

"Client/server isn't as easy as you think," said John Van Den Hoven, manager for database and enterprise information systems at Noranda, Inc.

The Toronto-based company has taken a stab at a few contained, departmental client/server projects in the Hewlett-Packard Co. HP/UX environment but has basically stalled more ambitious client/server efforts until tangible management tools arrive. Furthermore, Noranda is looking for tools that conform to Distributed Management Environment standards, Van Den Hoven said.

Supercomputers

# mputer model simulates car crashes

By Ellis Booker

Hurling crash dummies through windshields is expensive and time-consuming, but it has been the only way to study structural car damage and human injury at the same time.

A project proposed by Los Alamos National Laboratory in New Mexico and General Motors Corp.'s Research and Development Center earlier this month could change that.

The two organizations said they hope to work together to develop a computer model that integrates the now parallel work being done through separate car

crash and occupant injury simulations. The proposed model would run on Cray Research, Inc. supercomputers at Los Alamos.

Vehicle damage and human injury simulations exist today but are studied separately. The hope is to develop one model able to simulate damage to soft tissue and vehicle damage The \$3 million to \$6 mil-

lion project is due to kick off in 1995 and run for three years if Los Alamos gets the OK from the Department of Energy's Defense Programs office, which will largely fund the research. GM has already committed \$200,000 for the project.



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PC and workstation LANs, linked to

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depends on information, nothing can "serve" the rest of your computer network "clients" to the degree a mainframe can. And IBM's new LAN File Services/ESA and LANRES servers make it easier than ever to give all your LANs—whether they're driven by OS/2° LAN Server, NetWare° or UNIX°—direct access to the enormous power of a mainframe.

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### Users test Sterling's Solve: tool set

By Jean S. Bozman

Sterling Software, Inc.'s new Solve: series of object-oriented systems management tools, unveiled last month, promises ease-of-use advantages over the tool set it replaces, the procedural code Solve: packages. Sterling got those packages when it acquired Systems Center, Inc. in Reston, Va., earlier this year [CW, July 5].

The new Solve: series has four components for problem management, change management, configuration management and asset management, said Michael Matthews, vice president of marketing at Sterling's System Management Division. The modules are priced at \$25,000 apiece for use on midrange IBM mainframes. Prices vary by processor size, he said.

Some Sterling users who have seen early versions of the product said it looks far easier to use than the procedural code products, which have complex scripting procedures.

#### **Going Down Under**

Longtime Sterling NetMaster site Telecom Australia in Melbourne has been testing the new Solve: code for a year, and it plans to put it into production next month. The object-based code allows each of the Solve: modules to swap data with the others, said systems management engineer Nick Lukies

"I can reuse the code in the scripts," Lukies said. "The real advantage is when you use the [modules] together, there are no real boundaries between them. We end up with applications that are developed quickly, with greater functionality."

"I think it's very user-friendly," said Jackie Morris, manager of technical support at Lomas Information Systems, Inc., a mortgage services company in Dallas. "Users can quickly write a script to do searches." Morris also liked the ability to customize screens.

Lomas uses Sterling's NetMaster, a network manager designed by Systems Center, and IBM's mainframe-based Info-Man for systems administration, Morris said.

#### Brief

#### IBM, Digital fuse prints

IBM's printing systems company, Pennant Systems, and Digital Equipment Corp. announced they will jointly develop a standardsbased print management framework for distributed computing environments. The framework will conform to the International Standards Organization Document Printing Architecture Standard 10175, which defines print objects, attributes and protocols for submitting print requests across heterogeneous systems.

The object-oriented technology in the Solve: software anticipates the use of objects as agents for enterprise systems management by the mid-1990s, industry analysts said.

Sterling chose to build its own objectoriented system and enterprise data repository rather than use industry-standard C++ and the Object Management

Group's Common Object Request Broker Architecture spec, analysts said.

The analysts said the four Solve: packages will compete with IBM's InfoMan as well as Computer Associates International, Inc.'s NetMan and PNMS from Peregrine Systems, Inc. in Carlsbad, Calif. Solve: runs under IBM's MVS, MVS/ESA and MVS/XA operating systems but has not yet been ported to Unix systems, analysts noted.

Matthews said users can expect a Unix version, along with support for Microsoft Corp.'s Windows 3.1, in the next release, due next year.

The new Solve: software has been available for several weeks but is in use primarily at beta sites. "I would consider them to be in an early release," said Bruce Allen, a vice president at Meta Group, Inc.

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#### Large Systems

System Software Associates, Inc. has introduced three business applications designed to help manufacturers and distributors tailor operations around customer demands, automate warehousing and better manage credit procedures.

According to the Chicago company, the new applications integrate with more than 50 of the company's other Business Planning and Control System/Advanced Solution applications.

Configuration Management automates the configuration and order-entry processes that follow a customer request for a make-to-specification product.

Warehouse Management automates the management and flow of products through a warehouse.

Credit and Deductions Management evaluates customer credit data to help credit and sales managers review customers' credit eligibility.

Each of the products is priced from \$5,000 to \$120,000.

Sustem Software Associates (312) 641-2900

Candle Corp. has announced Omegamon II for CICS Version 100 and Omegamon II for DBCTL Version 110, performance monitors for on-line transaction processing.

According to the Santa Monica, Calif., company, both products incorporate a Common User Access interface and are integrated with OmegaCenter for the Transplex, an enhanced implementation. of Candle's integrated solution for enterprisewide availability management.

Omegamon II for CICS offers features such as resource-limiting automation. expanded historical reporting, extended context-sensitive help and third-party

Features for Omegamon II for DBCTL include a Common User Access interface, single point of control with Tranplex Navigation, historical reporting and a transaction-reporting facility.

Omegamon II for CICS prices range from \$43,000 to \$97,000; Omegamon II for DBCTL ranges from \$28,500 to \$64,500.

► Candle (310) 829-5800

Hawkeye Information Systems has announced Release 7.0 of PathFinder, documentation and analysis software for IBM's AS/400.

According to the Fort Collins, Colo., company, PathFinder offers a cross-reference "refresh" function for libraries that automatically documents all objects residing in that library; cross-reference history information that includes CPU time used to build or refresh the crossreference files; and a scan source member option that has been enhanced to scan by date range and can scan a specified source type.

A grid report that provides a matrix of devices attached to local or remote workstation controllers has been added to the network configuration flow-chart options.

License fees for PathFinder Release 7.0 cost \$5,500.

► Hawkeye Information Systems (303) 498-9000

ASA International Ltd. and Oracle Corp. have announced that ASA's data collection system, SmartTime, is being released for the Oracle database using

According to ASA International in Framingham, Mass., SmartTime automates time and attendance recording and activities such as work-in-process tracking, labor reporting, inventory movement and quality control.

The product costs \$300 per client. Server prices range from \$5,000 to \$100,000.

► ASA International (508) 626-2727

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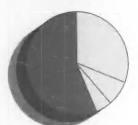
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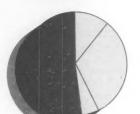
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### Melding Unix, Windows worlds

Users consider options for migrating applications

By Melinda-Carol Ballou

Corporate sites with mixed environments are finding that Windows emulators may just not cut it for migrating key applications over to Unix and other operating systems.

To make the move, some of those sites are looking at two main vendors for tools that support Microsoft Corp.'s Windows application programming interface and Microsoft Foundation Classes (MFC): Bristol Technology, Inc. in Ridgefield, Conn., and Mainsoft Corp. in Mountain View Calif.

While emulators such as Sun Microsystems, Inc.'s Wabi can be used for lowend applications, according to industry analysts, software demanding more robust performance requires tools such as those from Bristol and Mainsoft.

"Many ISVs and corporate IS people can write for Windows and successfully use emulators like Wabi, but those emulators can also be slow and problematic," said Scott Winkler, a director at Gartner Group, Inc., a consulting firm in Stamford, Conn. "Bristol and Mainsoft offer a robust environment to create one source for an application and have it live in WinSome corporate information systems

users agreed. One group of developers at Electronic

Data Systems Corp., who created an overdrive analysis program for modeling vehicle systems for General Motors Corp. in Troy, Mich., is evaluating the tools, according to Stuart Slack, an engineer at the site. An analysis group there is running compute-intensive software on Unix workstations but wanted access to the original PC application, Slack said.

"We want to have data exchange so that the models we create on the PC will run on Unix and will be exactly the same across groups," he said.

#### Cost savings

Others said the software saved them the cost of retraining or bringing in Unix

"We're primarily a Windows shop, and we didn't have to hire Unix programmers the tools enable us to have applications with a single set of source code running under Windows and Unix," said Linda Jojo, program manager at General Electric Co. in Schenectady, N.Y., who used Bristol's Wind/U tools to move a scheduling database from Windows to Hewlett-Packard Co.'s HP/UX.

Mainsoft began shipping its MainWin software developer's kit last month; Bristol began shipping the latest version of

#### Candidates

Possible scenarios for using Mainsoft or to Unix:

A site where high-end CAD software is running on Unix workstations, but less compute-intensive modeling software is running on PCs, and groups need to share the application in order to work together.

Oil analysis applications running on Unix machines needing access to PC data.

PC productivity applications being ported to Unix by software vendors or corporate IS.

#### Making the switch

Developers seeking to migrate their applications must go through the following steps:

Make files accessible to the Unix orkstation and compile the code with the native Unix compiler.

Link the code with either Bristol's Wind/U library or Mainsoft's MainWin library, both of which emulate the Windows API.

➤ At link time, applications created with MFC will specify either Bristol's or Mainsoft's version of the MFC li-

▶ Because Bristol creates native Motif applications, developers must also specify Motif at link time. (While Bristol supports native Motif, Mainsoft mulates either the look and feel of Motif or Windows for the Windows applications running on Unix.)

The applications can then be executed on Unix, and developers can be gin testing and debugging.

its Wind/U software earlier this fall. Both plan to offer support for Win32s early in 1994 to enable developers to move their code to Microsoft's Windows NT.

Developers can use these tools with applications created with a variety of C or C++ development environments, including Microsoft's Visual C++ and Symantec Corp.'s C++ Professional.

Mainsoft's MainWin software developer's kit is priced at \$5,000 for the first copy and \$2,000 for additional copies. Runtime copies for Unix workstations are priced at \$195.

Bristol's Wind/U 32s is priced at

#### Multimedia tools

#### ScreenCam gives voice to applications

By Michael Vizard

As part of a bid to reduce end-user training costs, Lotus Development Corp. has moved into the application development arena with a tool that allows developers to incorporate verbal instructions while walking users through an applica-

Called ScreenCam, the multimedia tool allows an application developer to capture sound, application screen activity and cursor movement in a single integrated

Within an application, developers can use ScreenCam to add online voice tutorials that highlight how a specific feature in the application is used.

'ScreenCam is going to be great. We can now add the same type of help utilities plus voice that are in standard PC applications to our inhouse applications. I think we'll use it with every application we have," said Sheldon Laube, director of information technology at Price Waterhouse.

While ScreenCam incorporates audio, the tool does not support video. According to Steve Barlow, product manager for Lotus' multimedia products, video has been slowing down the adoption of multimedia products because they require too much memory and disk resources to create relatively small video images.

Because ScreenCam supports audio only, Barlow said application developers will be able to deploy it on applications on any 80386-class system that supports a sound card. ScreenCam itself requires only 1M byte of memory.

In fact, Compaq Computer Corp., Inmac and DSP Solutions plan to bundle ScreenCam with future products, Barlow said.

In addition, Lotus plans to add ScreenCam to its applications in 1994, including a version of 1-2-3 for Windows announced at Comdex/Fall '93.

ScreenCam will ship later this

#### Pact excites Smalltalk users

**Object DBMS** 

objects but

depends on

proprietary links.

By Jean S. Bozman

Object Design. Inc.'s collaboration with Parc-Place Systems, Inc. will ease users' worries about where to store their Smalltalk objects, users and analysts said in the wake of the companies' recent joint announcement.

The collaboration will provide a Smalltalkcompatible object database for those who store their objects in relational databases or those who use vendor-specific links to object data-

The two firms recently said they have started to integrate Burlington, Mass,-based Object Design's ObjectStore object-oriented database with ParcPlace's Smalltalk object language. The resulting interface should be completed by mid-1994 and available by the end of 1994, said Richard Dym, marketing vice president at Santa Clara, Calif.-based ParcPlace.

Object Design also plans to submit the interface to the Object Database Management Group as a standard link to all object databases, said Gene Bonte, Object Design's vice president of product management.

Some users said the integration will make production applications easier to manage.

"It is always better for us if the language provider steps up to support all the functionality," said Donald Chaney, applications development manager at DHL Airways, Inc. in Redwood City, Calif. "We try to limit the number of vendors we have to deal with for problem determination." DHL uses a Sybase, Inc. relational database to store Smalltalk objects created in ParcPlace's VisualWorks development environment.

#### Mapping help

Other users said they believe the link will ease

the problem of "mapping" Smalltalk objects into relational datastorage is more compatible with Smalltalk bases or dissimilar object database management systems. It will help users extend departmental Smalltalk prototyping and simulation applications across enterprises, said one West Coast user who did not wish to be named.

"Traditionally, they haven't had many persistent-object alternatives, compared to C++ users," he said.

Industry analysts agreed, saying the C++ market is about 10 times larger than the multivendor Smalltalk market, thus limiting objectstorage choices. Other Smalltalk vendors include Digitalk, Inc., Easel Corp. and IBM.

Object, page 76

#### **Application Development**

#### Briefs

#### Sun object assembly

Oberon Software, a small vendor of object-oriented tools, said it will mesh its SynchroWorks visual tools with Sun-Soft, Inc. 's Project DOE (Distributed Objects Everywhere) environment. The visual tools reportedly will help Sun user at commercial sites assemble code from objects. SynchroWorks for Solaris 2.x will ship with SunSoft's Project DOE developer's release by year's end, SunSoft said.

#### Software engineering

Rational in Santa Clara, Calif., has created a Commercial Operations Group that will provide software engineering services to Fortune 1,000 companies.

#### **HP port to Stratus**

Hewlett-Packard Co. said it will port its SoftBench Framework application development technology to Stratus Computer, Inc.'s Unix-based fault-tolerant systems.

#### **Borland licenses Q+E**

Borland International, Inc. has licensed Q+E Software's database access technology, Q+E Extend, for use with future Borland products. Borland previously used Q+E Extend with its Quattro Pro for Windows spreadsheet.

#### LaserData, Progress pair

LaserData, Inc. in Tyngsboro, Mass., and Progress Software Corp. in Bedford, Mass., announced an agreement to

#### **Smalltalk**

CONTINUED FROM PAGE 75

Some Smalltalk users avoid the mapping problem altogether. The Snohomish County Public Utility District in Everett, Wash., uses Smalltalk objects to trigger Digital Equipment Corp. Rdb relational database updates on a Digital VAX server.

"Objects on the desktop invoke a method or transaction" on the VAX, explained Craig Gowdey, manager of systems development.

The relational database storage method involves "flattening" the objects to wedge them into the confines of a table-based geometry. "The standard answer from object database companies is that it's like disassembling your car to put it in the garage and having to build it up before you drive it away," said Adrian Bowles, director at Atelier Research in Westport, Conn.

Object DBMS storage is more compatible with Smalltalk objects but depends on proprietary links. The ODI/ParcPlace interface could simplify that translation task. "The logical model for the database matches more or less directly with the object model in the application," said Steve McClure, manager of object technologies program at International Data Corp. in Framingham, Mass.

cooperate on client/server document management applications. LaserData joined the Progress Open Access Program, which provides development support and joint marketing for companies that interface their software products with the Progress application development environment. In meseparate announcement, Progress said it has joined BM's Market Development Program, under which IBM and Progress will con-

duct joint marketing activities to pro-

mote the Progress Application Development Environment to IBM RS/6000 users.

#### ICS ships Builder Xcessory

Integrated Computer Solutions, Inc. in Cambridge, Mass., is shipping Builder Xcessory Version 3.0, a major release of its graphical user interface (GUI) builder for Open Software Foundation Motif environments. The new version integrates C++ object-oriented programming with Motif development and provides Motif 1.2

and international support. The company said Sun Microsystems, Inc. subsidiary SunExpress will distribute the version for Solaris platforms.

#### Company offers video course

Human Factors International, Inc. in Fairfield, Iowa, is offering a video training course, "How to Design Usable GUIs for Corporate Applications." It costs \$895 for two videos and four reference

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#### **Application Development**

Qualix Group, Inc. has announced XvM, an application programming interface (API)-level product designed for porting applications from OpenLook to Motif.

According to the San Mateo, Calif., company, XvM is a library for graphical user interface applications that supports the XView API to create Motif-compliant applications

The product can be used as a replacement for existing XView applications when converting to a Motif look and feel.

XvM costs \$495 per single-user binary and \$5,000 for source per building.

▶ Qualix Group (415) 572-0200

Intermetrics, Inc. has introduced a software development tool kit for IBM's Mwave-based systems.

According to the Cambridge, Mass., company, the Intermetrics Mwave Toolkit enables developers to write Windowsand OS/2-based applications by accessing the capabilities of the technology platform (fax, modem, audio, answering machine) and adding new system capabilities by programming the Mwave digital signal processor.

The tool kit includes the Mwave Manager application programming interface (API) and Driver API specifications for building Windows and OS/2 applications.

Other features include an ANSI C compiler, an assembler, a real-time software oscilloscope debugger, a digital signal processor library, linker/librarian and system utilities for application integration and development targeted at the Mwave digital signal processor.

One copy of the tool kit costs \$495.

► Intermetrics (617) 661-1840

Applied Logic Programming, Inc. has announced VIA/Visual Information Assistant for Windows.

According to the Wynnewood, Pa., company, the product is a graphical user interface, object-oriented application development tool that does not require programming.

Users can design an information structure integrating data from a wide variety of disparate sources

Using client/server technology, VIA acsses data by "launching" other applications or through Dynamic Data Exchange and Dynamic Link Library mechanisms. User-defined information structures can be graphically displayed and navigated, providing hyperdata, hypertext and hyperquery search-and-reporting capabilities.

VIA prices range from \$295 to \$795, depending on access options.

➤ Applied Logic Programming (215) 649-4740

MetaSolv Software, Inc. has introduced PowerFrame, a reusable class library for Powersoft Corp.'s PowerBuilder Version 3.0.

According to the Dallas company, the product provides an application architecture or technical framework upon which users can build any type of client/ server business application.

The product consists of three components: a reusable application architecture designed as a suite of inheritable window classes; a comprehensive client/ server security system that can be used to prevent unauthorized access to applications; a sample application that demonstrates the use of the application architecture, security and other Power-Frame features

Each component can be customized and extended to meet requirements. because PowerFrame is delivered in a class library format.

A single-developer copy of Power-Frame costs \$695.

► MetaSolv Software (214) 239-0692

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constantly monitors the health and performance of your server. So a small problem with a drive doesn't get the chance to become a big problem with your network.

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# Management

# NETWORKING WITHTHE FINE WY



EBC Industries' Harry Brown: "If you can't abide by the rules, then you should leave."

COOPERATION

AMONG

COMPETITORS —

REQUIRES
INFORMATION

SHARING, MAKING IT

A NATURAL

OPPORTUNITY FOR

IS. BUT CIOS CAN

BE ENTANGLED IN A

WEB OF INTRIGUE

UNLESS THEY CAN

OVERCOME MUTUAL

DISTRUST.

BY ROCHELLE GARNER

arry Brown was not amused. Word had gotten back to him that one of the companies invited into his carefully wrought network of suppliers and, yes, competitors wasn't playing fair: It was going after projects on its own instead of with the team.

"I said, 'If you can't abide by the rules, then you should leave.' They agreed and walked out."

Big mistake on its part.

The renegade manufacturer lost business because it didn't have the clout of Brown's network — an informal team of companies from around Erie, Pa., in the

same small-parts business. In contrast, Brown's EBC Industries, Inc. (Brown is its president) and all of its 11 allied suppliers and competitors have been grow-

Networking, page 84

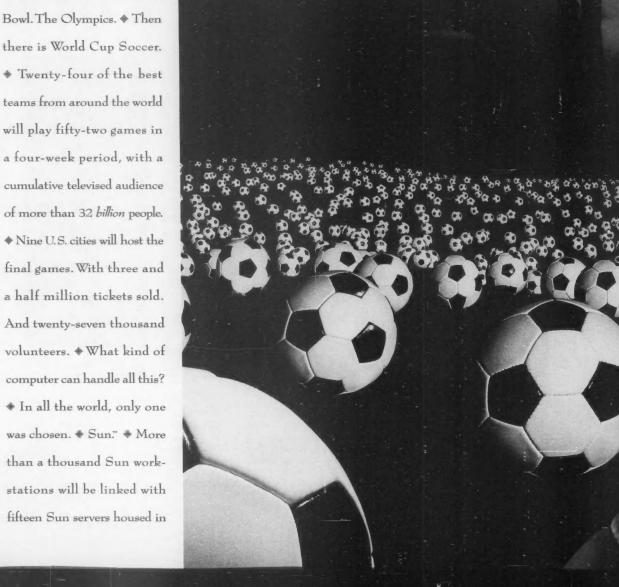


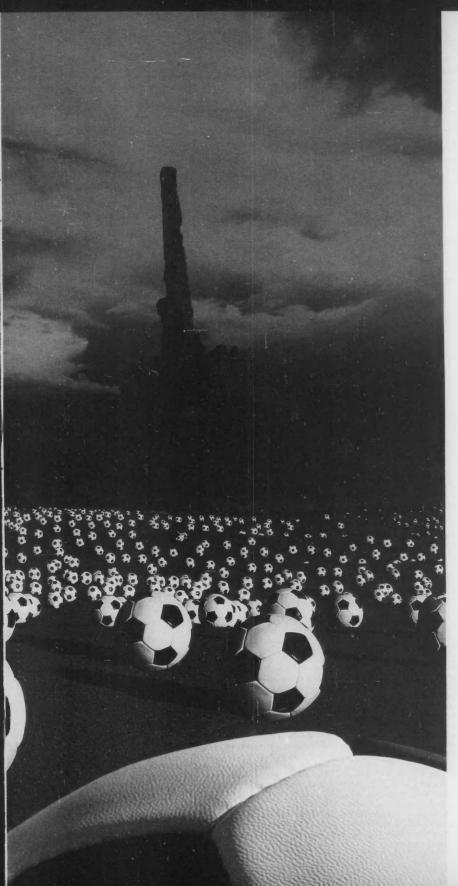
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#### **Networking**

CONTINUED FROM PAGE 81

ing at 12% to 15% every year since he cobbled together the network in 1988. EBC has grown from 68 employees to its current 93 and from less than \$4 million in sales to \$8.4 million expected by year's end.

That incident highlights the glories and potential pitfalls in the growing trend of "co-opetition."

Not familiar with the term? Get used to

CO-OPETITION

THE TEAMNET FACTOR BY MINES LIPHACK AND JEFFREY STAMPS SUGGESTS THE STEPS TO CO-OPETITIVE MACKEDS

1. CAREFULLY DEFINE THE PURPOSE.

2. IDENTIFY WHO IN EACH COMPANY NEEDS TO BE INVOLVED AND MAKE SURE THEY ARE ALL IN THE PLANNING PROCESS.

3. CREATE LINKS AMONG PEOPLE THROUGH E-MAIL AND REGULAR MEETINGS.

4. MULTIPLY THE NUMBER OF LEADERS AND REDUCE THE NUMBER OF BOSSES.

CONNECT THE HIERARCHY WITH THE "LOWER-ARCHY."

it — the word could become as prevalent as the phrase "virtual corporation."

Both embrace the concept of companies reaching across corporate boundaries to engage in mutually beneficial projects. But co-opetition, management pundits say, goes even further to include the notion of competitors working together toward a shared goal while continuing to compete.

For example, EBC gladly shares its electronic data interchange (EDI) expertise and inventory database with team members working on the same job. But should any member step on another one's territory, the members politely but firmly tell the violator to stop.

#### Some unsuccessful

Not everyone has had Brown's success. Others have ventured into collaborative waters only to find themselves mired in a swamp of distrust, churning through investment dollars without earning a single cent of return.

Take Electronic Joint Venture (EJV)
Partners. Like the Erie network, New
York-based EJV Partners embodied the
shared vision of competitors. But rather
than laid-back, small-parts manufacturers from the green valleys of Pennsylvania and Ohio, these companies were six
of Wall Street's leading bond-trading
firms.

Their goal was enormous profit. The result so far has been an industry joke.

Three years ago, the bond-trading

market hungered for data and analytical tools to more confidently buy and sell bonds. Sure, Bloomberg Financial Services, a financial news service, provided some information. But only some.

London's Reuters Holdings PLC, one of the largest market data companies in the world, approached New York-based Goldman, Sachs & Co.'s senior bond traders with a deal: Help us start a service to compete against Bloomberg. The business side called in James K. Burns, then Goldman, Sachs' chief information officer, to evaluate the prospect.

The idea looked great. So great, in fact,

that Burns, along with Salomon Brothers, Inc.'s Mark Sternberg, with whom he discussed the project, decided to eliminate the middleman.

"We both agreed: Why share this with Reuters?" said Burns, now president and ClO of SHL Systemhouse, Inc., a systems integration and outsourcing organization based in Canada and New York. "But we also said whatever we would do would start off behind Bloomberg, so we needed more partners."

Eventually, Goldman and Salomon recruited CitiBank NA in New York, The First Boston Corp. in New York, Morgan Stanley & Co. in New York and Lehman Brothers, Inc. in New Haven, Conn. Each partner would donate data and

software that the resulting service company — EJV Partners — would turn into a data and analytics system powerhouse certain to lure business away from Bloomberg.

Only it hasn't turned out that way. Every partner had a different idea of how to deliver the information: with a cutting-edge system that would take time to build or with a "reasonable" package that it could sell almost immediately. Cutting-edge won, and Bloomberg continued to gain ground with more customers.

But the problems ran deeper. While EJV Partners won't confirm or deny it, word throughout the halls of Wall Street holds that the six partners continually bickered over what facts, analytics and software they would give to the venture, holding out the best information for themselves.

Whatever the reason, the initial bondtrading system sucked eggs.

"When we evaluated EJV's system, it became clear that the marginal benefit over Bloomberg just wasn't worth the cost," says Tony Coffey, portfolio manager at Franklin Resources, Inc. in San Mateo. Calif.

In more than a year and a half, not one customer bought the system. Zip. EJV Partners' employment fell from 180 to its current 110. The firm's chief executive officer also felt the ax and was replaced last summer by Thomas Wendel. However, EJV Partners released a new, more capable system last summer that is finally

winning customers

"We've gone from [having] no paying customers to between 15 and 20 in the past four months," says Dick MacWilliams, EJV Partners' head of sales and marketing. Six of those paying customers are EJV Partners' original partners. What went wrong?

#### Agreeing to agree

"It's always difficult getting competitors to agree on common goals, common standards and common methodologies," MacWilliams says. "And when you have partners contribute more than just money, decision-making becomes even more complex."

EJV Partners management operated like the multiheaded Hydra, each with its own idea of how things should work.

That, maintains Jessica Lipnack, coauthor of *The TeamNet Factor*, can be a common source of failure. Lipnack, who actively promotes the idea of co-opetition, says participants must define with hard-edged clarity the purpose of their project. "That purpose is the glue holding the teamnet together," Lipnack says. "Without it, the project will fail."

Her point transcends mere platitude. After all, a traditional hierarchy contains rules, regulations and policies that people can follow. "But in a [teamnet] network, all you have is the shared agreement of what needs to be done," she says.

Perhaps one way to ensure clarity of purpose is with a disinterested arbitrator. That's one role Electronic Data Systems Corp. is playing as it helps four California managed-care plans develop the California Health Information Network (CHIN). "I constantly have to weigh in the back of my mind what is competitive information," says Joseph Sinsangkeo, manager of information systems technology at HealthNet in Woodland Hills, Calif. "That's where EDS and [Health Information Technologies] play a role—as keepers of company-specific information. And a lot of times they'll come back and say, 'You all have a lot more in common than you realized. Are you willing to share?"

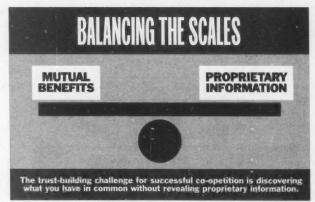
And while EDS' role as information broker is important, so is the relationship among the four partners. Every week, IS representatives from the four, along with representatives from EDS and Health Information Technologies, hold conference calls to work out implementation concerns.

Every month, CIOs and top business executives meet to hash out larger issues, such as choosing where the January pilot will roll out. Each member has an equal voice, which it exercises loudly and clearly. It's as if the project leaders had read Lipnack's book, with its admonition to meet regularly, push information both up and down the hierarchy and create more leaders (and fewer bosses) throughout the team.

#### Fewerthe better

It is also wise to limit the number of partners in the group at the outset and let the membership increase as it learns to work together.

For example, when CHIN finally goes on-line, partners will pay per transaction. And since volume will lead to volume discounts, participants hope to recruit as many competitors, IPAs and medical groups as possible.



Initially, Dallas-based EDS and its partner, Health Information Technologies in Princeton, N.J., were setting up an EDI system to transmit uniformly formatted claims/encounters, eligibility information and referral authorization among health care plans, independent physicians associations (IPA) and medical groups. For the competitors — Prucare, HealthNet, TakeCare and Blue Cross/Blue Shield of California — the challenge is to discover what they have in common without revealing proprietary data.

That, however, will be much later. For now, the aim is to keep the process running, which means limiting the players to four.

"I think the difficulty of reaching agreement increases exponentially as you add people," says Linda Hutchinson, senior systems consultant at PruCare. "But the nature of the project is that by having four of us cooperating, we will accomplish more than any one company could do alone."

This kind of openness and lack of for-Networking, page 88

#### **BY LESLIE GOFF**

hen G. Patrick Galvin had to make a decision about which electronic data interchange (EDI) organizations he should join on behalf of his company, he says he considered four factors: how to educate his staff, how involved his group needed to be in standards setting, which groups could help him find potential business partners and how much money he was willing to spend on membership

As vice president of information services at the Lincolnshire, Ill.-based Prescription Services division of Caremark International, he had to jump into the EDI fray quickly.

Galvin had been involved with EDI organizations while at Federal Express Corp. before he joined Caremark, but his new company, which he joined in September 1992, had only minimal electronic funds transfer applications in place. Caremark is a provider of alternative health care services such as mail-order pharmacies, in-home therapy and orthopedic care.

"EDI is the means to improving a company's profitability," Galvin says. "I saw many opportunities for us to implement trading partner relationships with drug manufacturers and our customers.

Deciphering the alphabet soup of EDI organizations across the U.S. can be as difficult as implementing EDI, however.

Some 32 active local and regional

# **Need to jump-start your EDI efforts?** Regional, industrywide EDI groups and standards bodies offer support.

working opportunities and educational forums. The groups are like "idea factories" that help "jump-start the imaginations of their members," says Don Waltzer, director of information systems at Spectrum Office Products in Rochester, N.Y., and founding chairman of the Rochester EDI Users Group.

The Electronic Data Interchange Association, a national EDI information clearinghouse, promotes EDI implementation and standards, trains EDI users, monitors legislative and regulatory activity, forms task forces among members and works with the standards bodies.

Industry-specific groups develop and promote standards within their respective industry segments and represent members before the American National Standards Conference ANSI X12 - the domestic interindustry standards body - and the Pan American Edifact Board (PAEB) — the regional representative of the global UN/Edifact standards body.

rate memberships and are overseen by the Data Interchange Standards Association, Inc., which also disseminates EDI information, including an annual listing of EDI publications, industry guidelines, local user groups and industry-specific

#### **Tapping resources**

For staff training, Galvin tapped the educational resources of the Electronic Data Interchange Association, of which he had been a member since his Fedex days. (He now serves on the board of directors.) Next he encouraged his applications developers to join the Greater Chicago EDI Forum as a means of learning from colleagues and staying abreast of new developments.

"Local user groups make for great networking opportunities," he says. "They can really help when you're just starting out and gathering the initial information you need."

Most of these groups were started by EDI implementors who wanted to forge bonds with colleagues in their area to share ideas and war stories, such as Atlanta's EDI Business Forum, initiated by three colleagues over a business lunch five years ago.

They offer technological and emotional support," Waltzer says, "Typically, companies get into EDI because they have to, and it has a language all its own. So in user groups you find a sympathetic shoulder.

Their missions and memberships differ from city to city, however, says Gay Slesinger, U.S. EDI marketing manager at Digital Equipment Corp. and founder and leader of the EDI Forum of New York

She suggests that before joining, prospective members should ask a few basic questions regarding the mix of participants: whether the group is oriented toward technical implementation, business issues or socializing with peers; vendor affiliations; and fees

Fees also vary, ranging from voluntary participation to less than \$100 per year for individual memberships to several hundred dollars for annual corporate memberships, Slesinger says

Industry-specific groups are less sympathetic and more political, working to develop industrywide standards and promote consistent industrywide EDI implementation.

The benefit to a company of belonging EDI, page 88

#### NATIONAL CROSS-INDUSTRY EDI ORGANIZATIONS

The following organizations are national in scope and serve all industry segments in the development, maintenance and promotion of EDI standards or in the education of EDI implementors and the promotion of EDI use in general.

#### **GROUP & CONTACT**

ANSI Accredited Standards Committee (ASC) X12 c/o DISA (see address below) Harriett Rusk, 1993 president, (703) 548-7005

#### SERVICE

Chartered by American National Standards Institute to develop uniform standards for domestic interindustry EDI for order placement and processing, shipping and receiving, invoicing and payment and cash application, etc.

ariat and administrative arm of

Data Interchange Standards Association, Inc. (DISA) 1800 Diagonal Rd., Suite #355 Alexandria, Va. 22314-2853 Harriett Rusk, 1993 president, (703) 548-7005

Secretariat and administrative arm of ASC X12 (see above) and the Pan American Edifact Board (PAEB, see below). Manages X12 membership, balloting standards development and maintenance, publications, annual conference and exhibit, X12 Committee Meetings, etc.

Electronic Data Interchange Association (EDIA) 225 Reinekers Lane, Suite #550 Alexandria, Va. 22314 Helen Cook, manager of member services, (703) 838-8042

Promotes EDI use, with focus on the business impact and benefits of EDI, and educates EDI implementors; acts as a clearinghouse for a wide range of EDI information.

American Edifact Board Pan American Edifact Board (PAEB) c/o DISA (see address above) Carrie Spencer, administrator, (703) 548-7005 Develops Pan American regional consensus on international EDI standards; represents region to UN/Edifact in development, maintenance and promotion of international standards.

UN/Edifact UN/ECE Trade Division Palais de Nations CH-1211 Geneva 10, Switzerland Address correspondence to Hans Hansell, 41-22-917-2457

Develops, maintains and promotes international EDI standards; coordinates activities of international regional representative bodies, such as PAEB (see above), with regard to EDI standards; operates under auspices of the United Nations.

#### LOCAL AND REGIONAL EDI USER GROUPS

The following is a complete guide (in alphabetical order, by city) to active regional and local user groups, according to the records of ANSI's Xx.2 Education and Training Task. Group. For more information, contact the person listed or call John Goetzman, vice chairman of the task group, at (800) 367-4272.

#### CONTACT CITY

Austin, Texas Central Texas EDI Users Group Atlanta EDI Business Forum Boston-Hartford New England EDI Users Group Chicago Greater Chicago EDI Forum Columbus, Ohio Central Ohio EDI Users Group Dallas-Fort Worth Dallas-Fort Worth EDI Bus, Forum Colorado EDI Users Group Michigan EDI Users Group Piedmont EDI Business For Detroit Greensboro, N.C. Harrisburg, Pa. Central Pa. EDI User Group Houston Texas Gulf Coast EDI User Groun Indianapolis AIAG User Support Group\* Jacksonville-Miami-Orlando-Tampa, Fla Florida EDI

Kansas City, Mo. **EDI Business Forum of Greater** Kansas City Southern California EDI Los Angeles

Bar Code/EDI User Council Milwaukee EDI User Group Minneapolis-St. Paul EDI Forum of New York City New York The Midlands EDI As Delaware Valley EDI Roundtable Arizona EDI Roundtable Philadelphia Phoenix Pittsburgh **Greater Pittsburgh EDI Partners** Portland, Ore. Portland Infoshare Virginia EDI Forum Richmond, Va. Rochester, N.Y. Rochester EDI Users Group Greater St. Louis EDI Forum St. Louis San Diego EDI Users Group San Diego San Francisco Northern Calif. EDI User Group Northwest EDI Roundtable

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Bob Browne, (816) 860-7795

Kathy Carlson, (213) 235-0229

Mark Thibadeau, (414) 375-1150 Dee Thibodeau, (612) 831-9000 Gay Slesinger, (212) 856-2892 Steve Brownfield, (402) 493-6836 Jeff Brooks, (215) 968-6241 Dave Darnell, (602) 838-5316 Warren Smith, (412) 234-1479 Mark Federsteil, (503) 231-5000 Bruce Chambers, (804) 281-3134 Don Waltzer, (716) 424-3600, x157 Susan Watson, (314) 235-3809 Ann Templeton, (619) 534-3436 Suzanne Murphy, (415) 241-4550 Todd Ostrander, (206) 391-5123 Karen Raper, (918) 835-3111; or Sally Adams, (918) 586-6105 Teresa Yee, (301) 320-7409 Paul Daisy, (908) 972-2970

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#### Management

#### **Networking**

CONTINUED FROM PAGE 84

mality among members is what's so intriguing about a network of erstwhile enemies, says Brown at EMC, "We all just call, ask to come over and discuss the topic."

Taking the team approach

Interested in a particular job? Just tell the other players; they might want to vie for it, too. Want a new computer-numeric control program for your milling machine? No problem: EBC's programming staff will send one over.

The team approach has helped each member reach independent goals in ways otherwise not possible. In Brown's case, his goal was big, lucrative contracts that were beyond his reach. Brown, quite simply, needed help.

When he first took over what was then called Erie Bolt Corp., the manufacturer of parts for the transportation and defense industries was losing \$100,000 a

Worse, much of the shop floor equipment had been cannibalized to keep other machines operating. Then an order came in that EBC couldn't fill.

"So I went to my competitors, explained my dilemma and proposed that we go after contracts together," he says.

As it happened, one of those competitors, Joseph Dyson & Son in Painesville, Ohio, saw this as the opportunity to expand. It was the beginning of a beautiful relationship - one that eventually grew to include up to 12 suppliers and competitors that team up against much larger forces bidding on the same contract.

"We still compete. But we cooperate on areas where individually we couldn't do it alone, either because of equipment or capacity reasons," Brown explains.

#### That's the ticket

DEC. 12-DEC. 18

That attitude is just the ticket needed to succeed and one that is obviously not being lost on the CHIN group. Chances are, the four players in the CHIN group will succeed. Somehow, whether through common sense or just plain luck, they've established a way of interacting that promotes trust, open communication and a constant eye on the project's objective.

Those ingredients — crucial for any co-opetitive venture — are damnably difficult to instill among allied competitors. Just ask EJV Partners' members.

So before you enter the oh-so-brave world of collaboration, ask your gut if you and your potential partners can work together. If the answer's yes, prepare to work long and hard. If it's no, back out.

Garner is a free-lance writer in San Carlos. Calif.

#### INDUSTRY-SPECIFIC EDI ORGANIZATIONS

Note to the reader: The following is merely a sampling of industry-specific EDI organizations that develop and promote EDI standards within their respective industry segments. For a more comprehensive listing, contact DISA at (703) 548-7005.

#### GROUP

AUTOMOTIVE Automotive Industry Action Group (AIAG) 26200 Lahser Rd., Suite #200 Southfield, Mich. 48084

CHEMICAL Chemical Industry Data Exchange (CIDX) P.O. Box 4189 Trenton, N.J. 08610

ELECTRONICS
Electronics industry Data Exchange (EIDX)
c/o Electronics industries Association
2001 Pennsylvania Ave., NW
Washington, D.C. 20006

National Automated Clearinghouse Association (NACHA) 607 Herndon Pkwy, Suite #200 Herndon, Va. 22070

#### HEALTH AND HEALTH CARE

HEALTH AND HEALTH CARD.

Health Industry Business Communication Council Robert Hankin, president. (HIBCC) 5110 North 40th St., Suite #250 Phoenix, Ariz. 85018

Petroleum Industry Data Exchange (PHDX)
cto American Petroleum Institute
1220 L St., NW ington, D.C. 20005

#### RETAIL/GROCERY/WAREHOUSING

Uniform Code Council (UCC) 8163 Old Yankee Rd., Suite J Dayton, Ohio 45458

American Trucking Association's Management Systems Council (ATA/MSC) 2200 Mill Rd. a, Va. 22314-4677

#### CONTACT

Nancy Tilley, membership coordinator, (313) 358-3570

Debbie Hart, administrator, (609) 393-7088

secretariat, (202) 457-4962

Deborah Shaw, director, network development or Maggie Scarborough, senior director, product development (703) 742-9190

(602) 381-1091

#### John Oshinski, EDI coordinate

Christine Frapwell, EDI coordinator, (513) 435-3870

Douglas Anderson, director of technical services, (703) 838-1721

### "Electronic Government: Policies for Redesigning

Calendar

Government and the Workplace and for Improving Communications with Citizens." Washington, Dec. 12-14 - Sponsored by the State Information Policy Consortium. Contact: National Association of State Information Resources Executives, Lexington, Ky. (606) 231-1905.

Lap and Palmtop Exposition and Conference. Toronto, Dec. 13-14 - Contact: Laptop Expositions, New York, N.Y. (212) 682-7968.

Re-engineering: The Implementation Perspective, Boston, Dec. 14-16 - A seminar providing an introduction to the concepts and objectives of re-engineering with an analysis of the business factors driving it. Instructor will be Michael Hammer, The Center for Re-engineering Leadership in Cambridge, Mass. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

#### JAN, 2-JAN, 9

Third Annual ShowBiz Expo. New York, Jan. 6-8 - Contact: ShowBiz Expo, Los Angeles, Calif. (213) 668-1811.

1994 International Winter Consumer Electronics Show, Las Vegas, Jan. 6-9 - Contact: Electronic Industries Association, Washington, D.C. (202) 457-8728

#### JAN. 9-JAN. 15

ObjectWorld. Boston, Jan. 10-13 - Contact: World Expo Corp., Framingham, Mass. (508)

#### JAN. 16-JAN. 22

Client/Server Conference & Exposition. San Jose, Calif., Jan. 18-21 - Contact: CMP Conference & Exhibit Group, Manhasset, N.Y. (516) 562-7460.

Re-engineering: The Implementation Perspective. Boston, Jan. 19-21 - Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

Storage & Interfaces '94 International Technology Conference. Santa Clara, Calif., Jan. 19-27 — Nine separate but related forums and seminars will be offered during these dates. Contact: Technology Forums, St. Peter, Minn.,

Nomda/Landa Emerging Technologies Expo '94. Orlando, Fla., Jan. 20-22 - Contact: Nomda/ Landa, Kansas City, Mo. (816) 941-3100.

#### JAN, 23-JAN, 29

Demo '94. Palm Springs, Calif., Jan. 23-26 -Contact: InfoWorld Editorial Events, San Mateo, Calif. (415) 312-0545.

ComNet '94. Washington, Jan. 24-27 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700

Fourth Annual "Achieving Quality Software" Tutorial and Conference, San Diego, Jan. 26-28-Speakers will be Barry Boehm, University of Southern California; and Ron Radice, director of the Software Process Program. Contact: Vince Heald, Beck-Eilman Agency, La Mesa, Calif. (619) 469-3500.

10th International Conference on Engineering Information Systems: Product Data Management & Alternatives, Dallas, Jan. 26-28 - Contact: Management Roundtable, Boston, Mass. (617) 232-8080.

#### JAN. 30-FEB. 5

14th Annual Florida Educational Technology Conference, Tampa, Fla., Jan. 31-Feb. 4 - Contact: Bureau of Educational Technology/Florida Education Center, Tallahassee, Fla. (904) 488-0980.

Executive Technology Summit '94. Sponsored by The Society for Information Management and Computerworld. Tarpon Springs, Fla., Feb. 2-4 - Contact: ATI Travel Management, Chicago, III. (312) 644-6642.

Building Enterprise Architectures. Washington, Feb. 8-10 - Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

#### FEB. 13-FEB. 19

Sigda: Workshop on Field Programming Gate Arrays. Berkeley, Calif., Feb. 14-15 — Contact: Association for Computing Machinery, New York, N.Y. (212) 944-1318.

#### **EDI idea factors: industry groups**

CONTINUED FROM PAGE 85

to an industry-specific group is influence with X12 and PAEB without having to join those organizations, and in setting standard implementation guidelines within the industry itself.

Corporate membership in these groups costs thousands of dollars per year. Galvin's cost-consciousness has led him to choose the National Council for Prescription Drug Programs (NCPDP) over the Health Industry Business Communications Council, a national group that develops and promotes EDI standards in the health care industry.

"Our need right now is to develop relationships with drug manufacturers and NCPDP helps us set those up," Galvin

"There's a lot of standards setting going on in that group, and now it's integrating what it has developed into the X12 arena." .

Goff is a free-lance writer in New York.

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ment, maybe we've exaggerated a bit.\* But the truth is that we've reduced the prices up to 26% on selected Server 85 and 95 models. And we've prepared enough stock to keep them flying out of here. But don't wait forever.

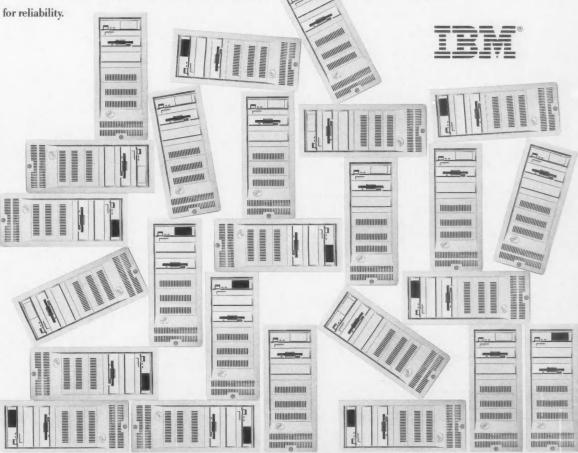
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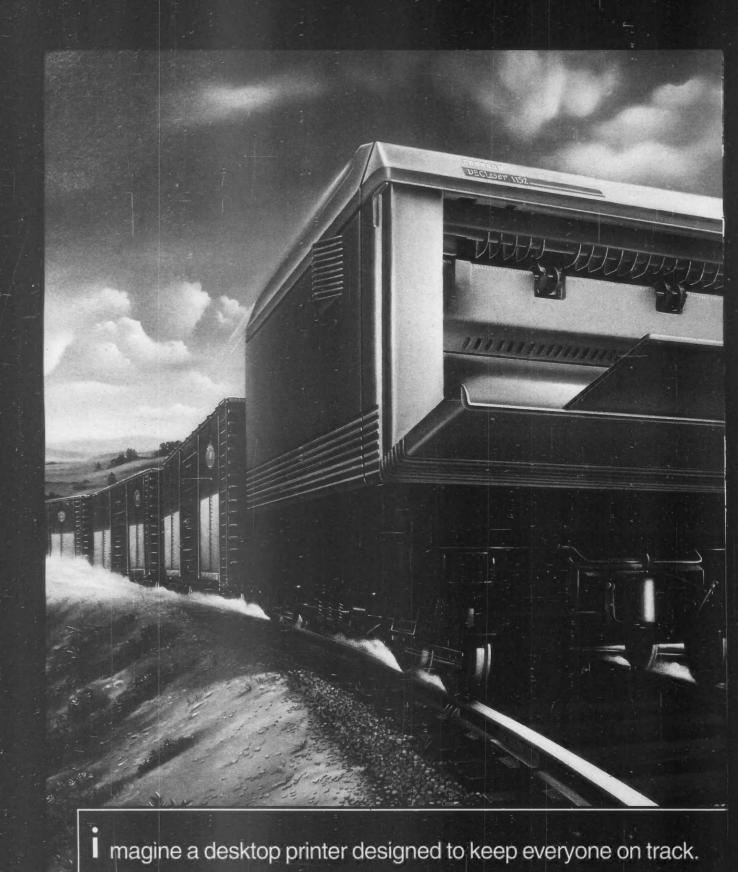
Plus the whole PS/2 line comes with a three-year onsite warranty with four-hour average response time.\*\*

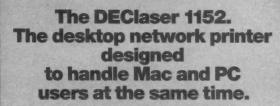
For more information about the PS/2 Server 95 and entry-level Server 85 models, call 1 800 772-2227.

And find out more about the servers that are almost limitless.



"Please call for model availability." "Available from IBM, M-F, 8 A.M.-5 P.M. in your time zone. Copies of IBM's statement of limited warranty are available upon request, by calling 1 800 772-2227. IBM and PS/2 mis registered trademarks and





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# The CW Guide to Mainframes

Buy a new mainframe? **Probably** not. Squeeze what you've got for all it's worth? Very likely.

**Tools for** automation. performance and optimization are selling madly, as users find no letup in mainframe use.

ot only is the mainframe not dead yet it's humming quite loudly. Bad-news downsizing stories. Lower hardware prices. And a realization of how these processing powerhorses can fit into a distributed computing plan. All of these factors have led to something of a mainframe renaissance. You couldn't ask for a better transaction processor, large database engine or super file server.

But "you can pretty much bet that the first answer is going to be 'No' when you go to the CEO and ask for more money for more mainframes," says Paul Mason, manager of system level software at International Data Corp. "It's going to be, 'Can't you get more out of what we have?""

One popular means of maximizing mainframes is performance monitors (see story page 104). These pinpoint bottlenecks and help with load balancing.

The trouble with these types of tools is that "each vendor has its little niche," says Lane Bradley, system vice president of information technology at Gainsco, Inc., an insurance company in Fort Worth, Texas.

"Data center managers would have to purchase products from hundreds of little vendors to find a unified solution," Lane says.

There's been more innovation in data center automation (see story

At some point, however, you have to increase capacity, whether through upgrades or by off-loading to other mainframes or other platforms altogether.

IBM just previewed its "transaction server," which is supposed to take on work from CICS or IMS applications to free up mainframe MIPS for other tasks. (For other recent announcements, see page 101.)

Even IBM recognizes that large systems will not always come in today's form factor. Many traditional and nontraditional - mainframe vendors are looking to offer even lower-priced systems that are smaller and more conducive to today's open environments (see story page 101).

#### inside

Buyers' Scorecard: Landmark Systems Corp. tallies highest overall satisfaction score among leading MVS performance monitors. Page 104

Firing Line: Evaluators of the Unisys 2200/500 said the system meets mainframe performance levels and substantially reduces environmental costs. Page 109

# AUTOMATE

VENDORS OF DATA CENTER TOOLS STRIVE TO KEEP PACE WITH DISTRIBUTED REQUIREMENTS

By Michelle Louzoun

ata center automation tools may not be the most stylish thing to talk about today, but they soon may be. Data center workloads continue to rise, especially as companies turn to centralized control

What's more, vendors of automated tools have been hard at work keeping up with the challenges of distributed environments. The most interesting of these advances are applications that communicate with one another and across platforms, consoles that offer a view of the distributed environment and LAN backun

#### Integrated applications

of their distributed systems

When automation vendors such as Boole & Babbage, Inc., Legent Corp., Candle Corp., Computer Associates International, Inc. and Altai Software, Inc. first began to sell tools that automated mainframe chores, they offered a variety offiscrete applications, such as console automation, performance monitoring, report distribution, job scheduling, automatic restarting of programs and problem tracking.

Recently, however, users began demanding that these applications work together. For example, if the scheduling program was running a batch job that failed, it would alert the restart recovery package, which would then try to correct the fault. If the restart recovery software couldn't get the job running, it would alert an operator and/or open up a problem ticket.

This type of integration can dramatically improve efficiency. "An organization could easily see a 30% increase in productivity through integration," says Ross Markley, a systems engineer at Norwest Technical Services, Inc., the processing arm of Norwest Bank in Minne-

apolis. At a previous position, Markley was working with an inhouse integrated suite of applications from CA.

Service levels would also increase. "Operator mistakes are the biggest cause of downtime, lost resources, heartache and poor services," Markley says.

Integration efforts, however, are at an immature stage. "A lot of these products were developed as singlepoint packages or brought together through acquisition," says Igor Stenmark, program director for software management strategies at Gartner Group, Inc. in Stamford, Conn. "They were not designed using the same database and the same code. The degree of integration is shallow."

"With many of these programs, the interface for each function looks the same, but that's about it," says Phil Arsenault, a systems consultant at Metropolitan Life Information Systems Center in Greenville, S.C.

The most you can hope for with the tra-

ditional vendors is for one or two applications to be strongly integrated. Altai, Boole & Babbage, Legent, CA and Candle all offer good integration among several applications.

Newer vendors such as 4th Dimension Software, Inc. are entering the market, hoping to fill that void. "This company was fortunate enough to enter the market just recently and developed all of its products in one monolithic effort."

Stenmark says. The Irvine, Calif., company, which introduced products in 1987, offers the best integration with the greatest range of categories, Stenmark says.

Of course, single-vendor solutions preclude you from purchasing the best of the breed. And the quality difference among the various applications is "like the difference between a Rolls Royce and a Ford Escort," Arsenault says. "Some batchscheduling packages, for example, don't contain documentation in the product itself and can't take prerequisites into account."

#### **Cross-platform suites**

It's not enough, these days, for your applications to work well together.

The average corporation has six hardware platforms, says Yossie Hollander, chief executive officer and chairman of 4th Dimension Software. There is a need, therefore, for the integrated applications to work across the distributed environment.

"With enterprisewide automation, you can monitor an entire application instead of just the components," says James Spangler, manager of data center automation at United Parcel Service, Inc. in Mahwah, N.J. "Right now, we monitor specific pieces of hardware. If the AS/400 goes down, we don't necessarily know its affect on our package-tracking system and what other pieces of equipment will

# More so than any other area of information systems, data centers are seeing rising workloads and shrinking budgets. Base: 200 international data centers BETWEEN 1992 AND 1993, WORKLOADS INCREASED BY: BUDGETS WERE CUT BY AN AVERAGE OF: 7%

Source: Nolan, Norton & Co.

#### integrated automation products

| COMPANY  | CONSOLE<br>AUTOMATION | PERFORMANCE<br>MANAGEMENT | STORAGE<br>MANAGEMENT | REPORT<br>DISTRIBUTION | JOB<br>SCHEDULING | AUTOMATIC<br>RESTART<br>AND RECOVERY | PROBLEM<br>TRACKING | DATA<br>BALANCING | SYSTEMS<br>COVERED                           |
|--|-----------------------|---------------------------|-----------------------|------------------------|-------------------|--------------------------------------|---------------------|-------------------|--|
| Altai Software, Inc.<br>Arlington, Texas (Zteam)   | •                     |                           | •                     | •                      | •                 | •                                    |                     | •                 | MVS, VSE VM                                  |
| Boole & Babbage, Inc.,<br>Sunnyvale, Calif.<br>(Empact and Mainview)                       | •                     | •                         | •                     |                        |                   | •                                    |                     |                   | MVS, IMS,<br>CICS, DB2                       |
| Candle Corp.,<br>Santa Monica, Calif.<br>(Omegacenter)                                     | •                     | •                         | •                     |                        |                   | •                                    |                     | NA                | MVS, VM,<br>CICS, DB2,<br>IMS, VTAM          |
| Computer Associates<br>International Inc.,<br>Islandia, N.Y.<br>(CA/Unicenter)             | •                     | •                         | •                     | NA                     | •                 | •                                    | •                   | •                 | MVS, CICS, IMS<br>DB2, JES2, JES3<br>MVS ESA |
| 4th Dimension Software,<br>Inc., Irvine, Calif.<br>(Integrated Operations<br>Architecture) | •                     |                           | •                     | •                      | •                 | •                                    |                     | •                 | MVS,<br>FUJITSU MSP                          |
| Legent Corp.,<br>Herndon, Va.  | •                     | •                         |                       | •                      | •                 | •                                    |                     | - 100             | MVS, VM,<br>VSE, CICS                        |

NA: NOT AVAILABLE

YES

#### The CW Guide to Mainframes

#### **CROSS-PLATFORM SUITES**

The following is a list of vendors now developing applications that communicate with each other and across different platforms.

#### COMPUTER ASSOCIATES, ISLANDIA, N.Y. (CA UNICENTER/STAR)

CURRENT: An integrated product for HP/UX 9800 and MVS. Furune: Sequent, RS/6000, Sun, HP 9700, Data General Aviion in beta test. NetWare, NT planned. EXPECTED GENERAL AVAILABILITY: Third-quarter 1994.

#### 4TH DIMENSION SOFTWARE, IRVINE, CALIF. (ENTERPRISE CONTROL ARCHITECTURE)

CURRENT: Scheduling module for MVS, AS/400, VAX VMS, Sun, RS/6000. FUTURE: HP/UX (first-quarter 1994), security and report distribution expected in 1994. EXPECTED GENERAL AVAILABILITY: 1906.

#### LEGENT, HERNDON, VA.

CURRENT: Underlying technology assembled for MVS, Unix, AS/400, OS/2, NetWare, NT, HP/UX, Sun, VAX VMS. EXPECTED GENERAL AVAILABILITY: Applications to be introduced throughout 1994.





#### **CONSOLE AUTOMATION**

The following is a list of some enterprisewide console automation products.

- BOOLE & BABBAGE, SAN JOSE, CALIF.
- CANDLE
   AF/Remote
- Tone Software Corp., Anaheim, Calif. Compulert
- MAXM SYSTEMS CORP., VIENNA, VA.
- VOTEK SYSTEMS LTD., TORONTO, CANADA Comensa

#### CENTRALIZED BACKUP

The following is a list of products that provide mainframe backup and recovery for LANs. These packages have components that work on the mainframe and the PC.

#### · IBN

- Adstar Distributed Storage Manager
- New Era Systems Services Ltd., Calgary
   Harbor
- ENTERPRISE DATA, INC., PARSIPPANY, N.J. Upstream
- NETWORK SYSTEMS CORP., MINNEAPOLIS User Access
- Storage Tek, Louisville, Colo. Near Net Storage Manager
   Sterling Software Storage Management Division, Rancho
- CORDOVA, CALIF. SAMS: Expert, SAMS: Control





#### AUTOMATED TAPE LIBRARIES

The following is a list of some robotics vendors.

#### STORAGE TEK 4400 ACS, POWDERHORN AND WOLFCREEK

- IBM IBM 3495
- BOSCH STORAGE SYSTEMS, RICHMOND, MICH.
   BOSCH STORAGE SYSTEMS 8800 AUTOMATED TAPE LIBRARY
- EXABYTE CORP., BOULDER, COLO.
   EXB PRODUCT LINES
- MEMOREX TELEX CORP., DALLAS
  AUTOMATED TAPE LIBRARY

eventually be affected. By seeing everything tied together, we will be able to better understand the impact of a problem."

Enterprise automation would also bring some sorely lacking mainframe disciplines such as security, automatic backup and asset management to the distributed environment.

An array of generally available enterprisewide products is expected by 1996, according to Stenmark, from the likes of CA, Legent and 4th Dimension Software.

#### **Console automation**

For managers who can't wait to reap the benefits of enterprisewide automation, many of the parts are here today. The pieces won't buy you the same efficiency as a totally integrated product, but you can achieve some very dramatic improvements in head count and service levels.

One important piece is enterprisewide console automation, also known as out-board console automation. These are products that consolidate console messages and performance information from virtually any type of electronic device, including communications and facilities management equipment.

Enterprise console automation tools have been around for the last five years, but they haven't been taken seriously until recently, when people got concerned about distributed systems management.

Outboard console automation tools are usually Unix-based systems that communicate with mainframe performance monitors.

They provide an operator with a single view of the organization and in most cases can be programmed to start applications, fix minor problems and alert the operator of an emergency through speech or a flashing message.

Swiss Bank Corp. in New York has been

using Tone Software Corp.'s CompuLert since 1990. "We have one console to montior 40 different entities, including routers, multiplexers and our legacy equipment," says Roger Best, a network/ systems integration specialist at the bank

The cost of monitoring the bank's disparate computers without automation would be about \$12 million a year, according to Best.

Another piece of the enterprisewide management puzzle is automatic software distribution and asset management packages.

These programs provide a centralized way to install applications and transfer mainframe files to update workstations in an organization.

One user says he can install a simple program with a couple hundred kilosytes of memory to 400 workstations in under an hour. A manual installation would take three to four hours, he says, even if all the workstations were in the same place and nobody was working at their machine.

#### Centralized backup

Mainframes are increasingly viewed as an ideal place to back up data on PCs and LANs.

"The World Trade Center disaster taught us about the need for centralized backup," says Robert G. Simko, executive director of the International Technology Group in Los Angeles. "Companies with centralized backup were up and running in a week. For organizations with databases distributed over different floors and no centralized backup, it took over a month to get their computers running."

Louzoun is a free-lance writer based in Great Neck, N.Y.

# tape libraries for small shops

arge data centers have enjoyed the benefits of automated tape libraries for a number of years. Now systems are available for any size shop that wants to substitute robotic arms for human ones to do mundane tasks like tape mounting.

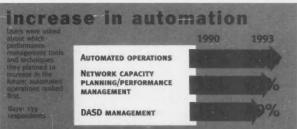
"I would say that a data center with 5 to 20 MIPS of processing could start using the junior silos," says Joe Sindelar, a consultant at Bell Atlantic Business Systems Services in Frazer, Pa.

The larger systems had minimum capacities in the thousands of tapes. With products like Storage Technology Corp.'s recently introduced 500-tape library, even small data centers can reap the benefits of automation. The list price for the Storage Tek tape library is \$125,000, according to a company spokesperson.

Labor reduction from automated loaders is substantial. "Companies can save anywhere from 10 to 30 operators," says Arnold Farber, president of Farber/LaChance, Inc., a consulting firm in Richmond, Va.

Processing time also decreases. "We expect to knock five to six hours off our back-office processing, primarily because the tapes won't be waiting for operators to load them," says Bruce Grand-champ, manager of computer services at Great Western Bank, which just purchased an IBM tape loader.

-Michelle Louzoun



Source: Institute for Computer Capacity Management

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# **OPTIMIZE**

WE ASKED SEVERAL USERS TO RECOUNT HOW THEY MADE THE MOST OF THEIR MAINFRAMES

By Joe Panepinto

Optimization tools usually serve to solve a targeted problem rather than provide an across-the-board fix. Here are some stories to help in your choice.



Jeff Goodfellow, GTE Services Corp., Camillus, N.Y.

Even though his boss billed him as a "star tuner" at GTE, Goodfellow would rather be considered a "lunch-pail and hard-hat, get-the-joh-done" kind of guy. He would rather fully exploit existing tuning methods than bring in exotic new technologies.

"We haven't done any real whiz-bang, in-depth-type stuff, but we've seen plenty of improvement." Goodfellow says.

GTE's data center in Syracuse, N.Y., operates as a zero-profit chargeback center that offers processing to all of GTE's units, including the world head-quarters in Stamford, Conn. A simple operation Goodfellow has used to save CPU resources has been to scan the job control language of incoming jobs and reallocate block sizes where appropriate.

Recently, GTE acquired a product called Strobe from Programart Corp. in Cambridge, Mass. It will automate the scanning process, making it easier to find cases where memory blocks are inefficiently allocated.

GTE is also exploiting MVS System Managed Storage (SMS) by writing routines that automate the use of virtual I/O. Virtual I/O saves time because data is written into the mainframe's memory rather than to a direct-access storage device (DASD). While individual jobs can write in the use of virtual I/O onto their job cards, Goodfellow has automated SMS' use so that all jobs writing less than

10 tracks of data can write it to system memory rather than physical DASD.

"Before, everyone wanted to use virtual I/O, but it was eating up memory," Goodfellow says. "Now we've exploited the system so we could force job writing temporary files to use virtual I/O and also force a limit on the amount of memory they could use."

Like other mainframe shops, GTE is obviously concerned with the I/O bottleneck. It uses SyncSort from SyncSort, Inc., so that 75% of sorts are no longer being done in job space but in hyperspace and so have no need for I/O to physical DASD. Also, GTE took another tack to beat the I/O bottleneck — it got a faster storage subsystem.

"We just brought in two of EMC Corp.'s Symmetrix 4832, 90G-byte disk arrays with mega caches and small platters," Goodfellow says. "Our average response time for DASD I/O went from 28 msec. down to 4 msec."



#### BlueCross BlueShield of Minnesota

Michael Bryant, senior systems specialist, Blue Cross/Blue Shield of Minnesota, Eagan, Minn.

When Bryant first started at Blue Cross, he realized there were more than 300 applications loaded on its two IBM mainframes (600J and 720), and nobody knew if anyone was using them.

"That was a real bee in my bonnet," he says. "I brought in SoftAudit [from Isogon Corp. in New York] and dropped underutilized software that was costing us \$150,000 a year in maintenance and update costs."

At the same time as Bryant was taking his first swipe at unused software, Blue Cross was installing an Amdahl Coip. mainframe software vendors are reaping benefits from the optimization trend in the form of healthy revenue growth



mainframe. As a result, his discovery of the unused software saved the company the costs of replicating the licenses on the new machine.



Ken Blythe, director, office of administrative systems, Pennsylvania State University, State College, Pa.

Like other mainframe shops mov-

ing to client/server, Penn State is repositioning its IBM mainframes as a type of superserver by introducing distributed processors on the front and back ends.

On the front end, Penn State is rapidly replacing 3270 dumb terminals with PCs (Unix, DOS and Macintosh machines); on the back end, it has moved its Adabas relational database management systems (from Software AG of North America, Inc.) to RISC-based processors, which feed data to the IBM 3090 and ES/9000 mainframes.

"We realized we could save processing cycles on our mainframes by moving Adabas and all of its associators off the 3270 architecture and onto RISC boxes, which are a lot cheaper and have much faster disk storage," Blythe says. "The way it works now is the mainframe gets calls to Adabas and passes them to the RISC machines. The RISC machines do all the compute cycles for searching, compressing and decompressing the data, then pass the data requested back to the mainframe, which completes the transaction.

"This takes those cycles off the mainframe and extends the life of that mainframe considerably," Blythe adds.

One solution Blythe has purposely avoided involves large (generally midrange or minicomputer) front-end data servers. Replicating data on such servers means updates are slower to reach the actual mainframe data table, whereas users want changes to be reflected immediately, Blythe says.

For example, a student may make an adjustment to a class schedule, which updates a replicated database on a midter server but not in the database itself. If the student then runs across the hall to the bursar's office to pay a bill, the transaction may not have been recorded yet, resulting in an upset student who has lost faith in the system, Blythe says.

Panepinto is a free-lance writer based in Amherst, Mass.

# DUITCRASE DIAIS WE ASKED 105 BUYERS' SCORECARD RESPONDENTS ABOUT THEIR MAINFRAME PURCHASE PLANS. ARE YOU PLANNING TO PURCHASE A MAINFRAME IN THE NEXT FIVE YEARS? DO YOU PLAN TO UPGRADE THIS YEAR? What Role do You see Your Mainframe in the next year?









### Don't be so quick to rip the mainframe!



FIRST PERSON By Joe Vincent

By now, you've probably heard the news. Recent studies say that five-year costs of applications de-

applications deployed on LANs are 1.5 to 2.8 times higher than costs of mainframe-centric applications. The mainframe also beats

LANs in availability, response time, maximum transaction volume and number of users supported. Superior metrics at lower costs — who could want more?

Unfortunately, your CEO has gotten all excited about client/server. So now everyone in IS is working to move your mission-critical applications to a few dozen LANs. Now what do you do?

First, be patient. The five-year cost studies will eventually show up in those in-flight magazine articles and your CEO will demand that everything be moved back again.

Second, let's discard our prejudices about "one-size-fits-all" computing platforms. The future of computing is in applications that span platforms. And the mainframe has an important role to play in that environment that can't be assumed by any other platform.

The consequence is you're going to be required to squeeze more from your existing mainframe resources. "But," you protest, "my production machine is already running at 85% CPU-busy; what can I do?"

First, run your mainframes at 100% CPU-busy, not 55%, as many companies do. CPU time has no shelf life—one can't bottle it over the weekend and uncork it for use on prime shift during the regular workweek.

Competent performance specialists can "tune" mainframes to run at 100%

#### Huge disk capacities

Humana has about 1.4T bytes of disk space. Its largest database is over 6oG bytes and contains more than 9o million records. This is more than the aggregate disk capacity of most LANs.

CPU-busy while apportioning CPU time to various workloads in proportion with the relative importance of those workloads. The previously unused CPU time will be harnessed to "overachieve" service levels and performance targets.

Second, acquire and exploit performance improvement software. System software products are available that virtually eliminate time-consuming processes such as directory searches and program module loads by doing them in memory using "Least Recently Used" algorithms. Products that buffer I/O for VSAM and IDMS are particularly effective at reducing CPU time, I/Os and, consequently, elapsed time, especially for batch processing.

Third, stratify workloads, particularly if you have multiple machines. What does this mean? Every machine should give preferential service to your most important workloads and progressively lower levels of service to other workloads in decreasing order of relative importance.

If you've divided your workloads into production and test machines, you have

guaranteed that some lower-priority workload will get better service on your test machine than some higher-priority workload on your production machine. Is that really what you intended?

Finally, accept the fact that capacity planning and performance management aren't part-time tasks.

You must be willing to commit the mon-

ey and people to the job.

Anything sounds good in the abstract, but can you successfully run mainframes at 100% CPU-busy and stratify workloads across multiple processors? Absolutely. We've been doing this at Humana for over 10 years.

Try it; you'll like it.

Vincent is director of technical services at Humana, Inc., a health care management firm in Louisville, Kv.



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# ALTERNATIVES

#### NEW MACHINES WILL HAVE ALL THE POWER - WITHOUT THE COST

#### By James Cassell

#### TRADITIONAL

- •5,600 to 12,000 circuits per chip.
- ·Many chips, substrates, boards.
- · High inherent propagation delays.
- · High power required for increased speed.
- ·Water cooling required.

#### ALTERNATIVE

- Scalability equivalent to the largest IBM ES/9000-class machine.
- Typically 20% to 25% of traditional mainframe cost.
- •Capable of running OLTP or batch applications.
- Compliant with standards such as Posix, DCE from the Open Software Foundation, TCP/IP and X/Open XPG3.
- An enterprise system operating environment, characterized as being "industrial strength" and "bulletproof."
- Processors of at least 40 MIPS each.

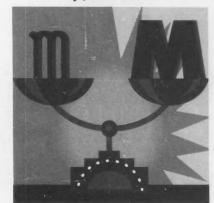
#### TECHNOLOGY THAT WILL LEAD THE WAY

- Digital Equipment Corp.'s Alpha used in machines from Digital and Encore Computer Corp.
- Mips Technologies, Inc. MIPS 4400 used in machines from Tandem Computers, Inc. and Pyramid Technology Corp.
- Tandem Computers, Inc. and Pyramid Technology Corp.

  •Sun Microsystems, Inc.'s SuperSPARC used in machines from Sun, and Amdahl Corp.
- Hewlett-Packard Co.'s PA-RISC used in machines from HP, Hitachi Data Systems Corp. and Convex Computer Corp.
- Intel Corp.'s Pentium used in machines by Unisys Corp., AT&T/NCR and Encore.
- •IBM's RS/6000 used in machines by IBM and Groupe Bull.

#### GENERAL-PURPOSE ALTERNATIVE MAINFRAMES ALREADY ANNOUNCED

- •HP 3000CS, Encore Infinity 90, Digital VAX 7000/10000, NCR 3600, Pyramid Nile Series NS100, NS150.
- Meanwhile, subsets of the large-system market, such as OLTP and decision support, are being addressed by vendors, including Kendall Square Research Corp., Tandem, NCube and Thinking Machines Corp.



#### HOW THE ALTERNATIVE MACHINES WILL BE USED

As users deploy client/server applications, centralized computing will make a comeback. The lower-cost alternative mainframe will gradually replace the traditional mainframe as the enterprise data server.

Its economies of scale and management capability will be used for backup of LAN servers and personal data an well am enterprise, mission-critical data.

Alternative mainframes will also become the "MIPS" server for the enterprise. Yet as the price/performance of alternative mainframes improves to near-workstation levels, large systems, in the form of alternative mainframes, will again be viewed we necessary continues and the statement of the st

Cassell is vice president and service director of large computer strategies at Gartner Group, Inc. in Stamford, Conn.

#### THE OBSTACLES IMPEDING ALTERNATIVE MAINFRAMES

Impeding progress is the need for robust, open software to support the full range of operations and applications across and beyond the enterprise. At present, applications have been limited to demonstrations of such obvious candidates as OLTP and database accessing.

#### WHEN ALTERNATIVES WILL BE IN FULL FORCE

All mainframe vendors will make the transition to core platform technology based on CMOS, incorporating massively parallel designs by 1996. Yet mainframe costs will drop, even for new systems that do not meet the "alternative" criteria. So along with older models, the traditional mainframe will not disappear anytime soon.

The transformation of the installed base will be more gradual. Nevertheless, Gartner Group forecasts that alternative mainframes could gain a 44% share of the large-system market by 1998 if they can penetrate the "glass house" in 1994 and 1995 before the traditionals can make the transition to a competitive offering of their own in 1996.

#### WHERE THE TRADITIONAL VENDORS STAND

IBM: Its general-purpose alternative mainframe is expected by the end of 1995. Its most difficult challenge is to break through its internal congestion with timely software to support applications on alternative machines.

Digital: Its transition to Alpha puts it ahead of schedule. But with the turmoil it faces in completing its restructuring, it will likely never return to its formerly dominant market position. Unisys: Its first transition machine — the 2200/500 — fits the definition of an alternative, when used in conjunction with its Extended Processing Complex offering. Its new first-rate management team positions the company for the future. HP: After a major restructuring, HP was the first vendor to come out with a common CMOS-RISC technology and open systems architecture. It's the best-positioned of the traditional competitors for new enterprise solutions.

#### coming attractions

ince the beginning of the decade, it's been clear that the industry would change how it viewed large-scale computing. Customers want speed, lower operating expenses, openness and seamless migration. It's a tail order—

but it's one that the entire industry has been working toward for the past few years.

Now that the criteria have been established, mainframe providers are preparing to launch or have launched their first responses to customer demands.

▶ IBM. Customers of the 390 system will see two new machines, both of which will be delivered in the first

\*Two more 9021 technology models that will deliver single-image performance of more than 500 MPS. The machines, which will be priced around \$40,000 per MIPS for the base hardware, meet the requirements of IS shops in need of a large single-image machine.

\*A highly parallel query system—dubbed PQS—for

DB2. This is a read-only, channel-attached DB2 database machine built from CMOS chips.

The PQS is the first of IBM's parallel CMOS offer-

The PQS is the first of IBM's parallel CMOS offerings, but it will not replace the mainframe. Rather, it lets customers process DB2 queries, freeing up mainframe cycles and helping with DB2 query overload. Future parallel versions will be billed as transac-

Future parallel yersions will be billed as transaction servers running the CICS subsystem. IBM will release other subsystems in the next few years, such as VTAM and TSO for use on the CMOS microprocessors.

Pricing structures will also change on the new parallel boxes. Costs will be bundled so that software, services and hardware are all included.

▶ Plug-compatible manufacturers. Amdahl Corp. and Hitachi Data Systems Corp. (HDS) will most likely roll out two more high-end 390 models. It's unnecessary for them to announce a parallel query box because IBM's new systems will attach to their processors, provided they have Escon channels.

Amdahl and HDS will be ready, however, to respond

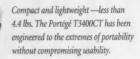


Unisys' new mainframes measure 17 to 35 sq. ft., compared with 102 to 483 sq. ft. on older machines

to future parallel CMOS offerings

▶ Unisys Corp. Unisys is shipping five new 2200 models, the 500 Series, which are CMOS-based machines targeted at midrange customers. Future versions will target high-end customers in the next few years.

Written by Susan Gannon Middleton, an analyst at Internation at Data Corp. in Framingham, Mass.

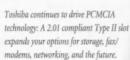


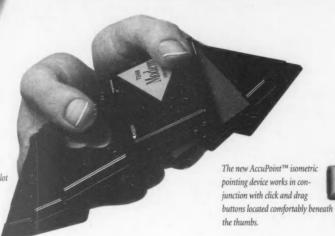






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# Landmark garners top score in MVS performance software survey

By Kevin Burden

ow efficient its core systems perform can be a key factor in whether your information systems department meets the performance and reliability goals required by the company's business.

MVS performance management software can help to ensure a system's efficiency by providing administrators with a means to track down bottlenecks and tune system resources.

Monitors that provide a dynamic window into the system are the most widely used type of performance-enhancing software, according to John Varanelli at New Science Associates, Inc. in Westport, Conn.

#### Options, options, options

But there are still other products in use. The old-fashioned method of making system adjustments after first analyzing reams of historical data is still in use in conjunction with real-time monitors and is, in fact, the basis of the new generation of monitors.

Administrators use historical data to build capacity models and can then predict system performance by simulating changes off-line.

In the Buyers' Satisfaction Scorecard user survey, Landmark Systems Corp.'s The Monitor for MVS (Tmon) tallied the highest overall satisfaction score by achieving the top mark in 14 out of 20 categories. Boole & Babbage, Inc.'s Mainview for MVS scored highest in five areas, and Candle Corp.'s Omegamon II for MVS, which commands the largest market share of the three products, took just one category.

Tmon posted its highest scores for its ability to effectively navigate to the source of a problem and provide a low overhead by its efficient use of the CPU's resources. The area where Tmon was shown up by its competitors was in its reporting capabilities — Mainview's strongest feature.

Mainview users awarded it the top scores for both reporting and historical reporting capabilities. However, users were dissatisfied with its system predicting and "what-if" simulations.

Although Omegamon scored the lowest overall satisfaction rating, users gave it the highest overall reliability score, which in turn was rated to be the most important feature in an MVS performance management system.



Each of the vendors has made a firm commitment to its service and support offerings. In the categories of quality of support and responsiveness of vendor service, all three scored equally high marks. As with most software products, service and support was rated among the five most important qualities.

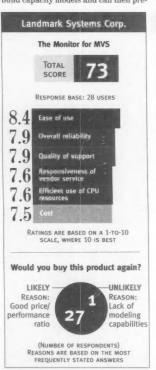
#### All in the family

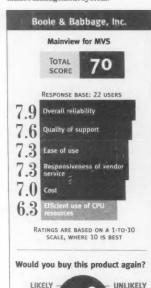
Each MVS monitor reviewed in this Scorecard is part of an integrated solu-

Candle Corp.

tion. Through the integration of each products' components, administrators are able to move through MVS and its interrelated subsystems — such as CICS, VTAM and DB2 — to the root of a bottleneck.

Buyers' Satisfaction Scorecard is a user survey of market-leading products conducted and tabulated by First Market Research Corp. in Austin, Texas. For a complete methodology, contact Kevin Burden at (800) 343-6474, ext. 717.





20

FREQUENTLY STATED ANSWERS

REASON:

Uses too

memory

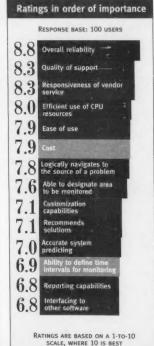
much

REASON:

speed

Real-time

Omegamon II for MVS RESPONSE BASE: 50 USERS Overall reliability Ease of use Efficient use of CPU resources RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST Would you buy this product again? LIKELY UNLIKELY REASON: REASON: 46 Good Too problemexpensive tracking capabilities (NUMBER OF RESPONDENTS) REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS



## SNA & UNIX.

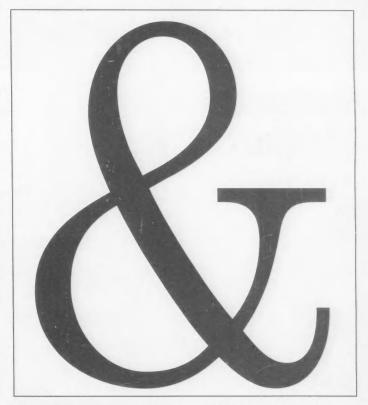
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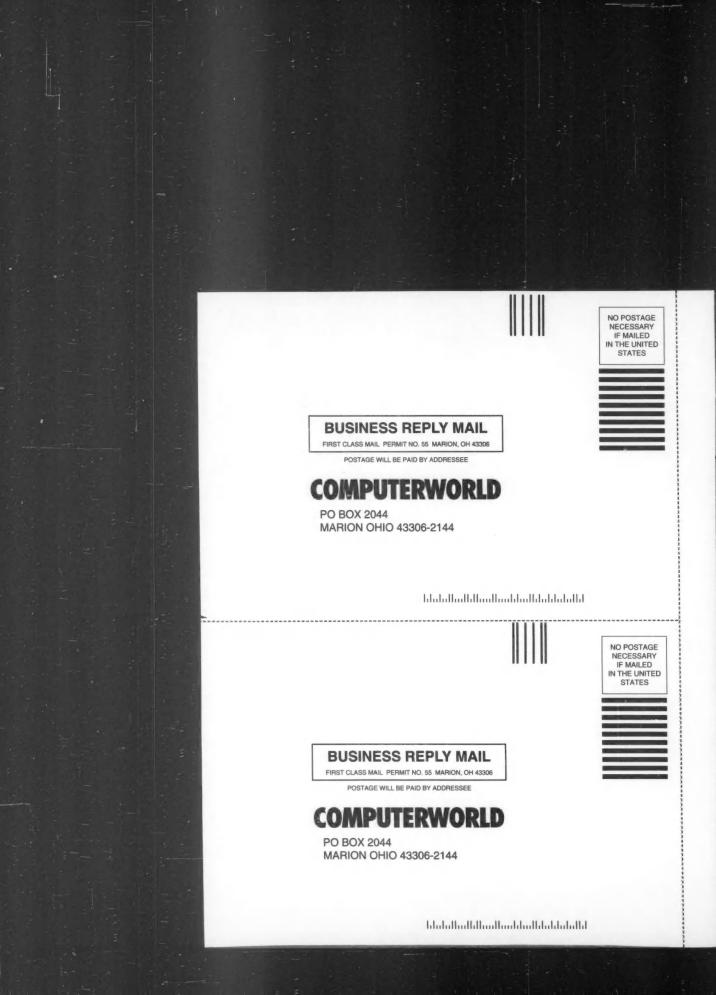
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COMPUTERWORLD





# Unisys 2200/500: Reduces costs, maintains performance

#### Unisys 2200/500

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

- Unisys Corp.'s 2200/500, released in September, redefines the term "mainframe" by providing big iron performance in a midsize system.
- Evaluators said the system runs all existing applications at equivalent mainframe performance levels while substantially reducing the environmental costs of previous hardware.

ased on cutting-edge CMOS processor technology, the system boasts mainframe performance in a package the size of an average minicomputer.

The air-cooled, 23- by 70-in. unit also eliminates the environmental costs of air-conditioning and water cooling.

The evaluators assisting in this survey included technical managers at a regional electrical supplies firm, a printing supplies company, a computer services firm and an insurance company. All were Unisvs customers who had substantial investments in other Unisys hardware. Their experience with the 2200/500 ranged from late evaluation stages to an imminent switch to production.

The ease of code migration won kudos. Ports ranged from 10,000 transaction processing programs at the electrical supplies firm to "a couple million lines of Cobol code," said the computer services evalu-

Also lauded was reduced floor space, which, according to the insurance evaluator, was "onetenth" the requirement of existing

The format for this evaluation was created with the assistance of Howard Rubin Associates and Technology Investment Strategies Corp.

#### Reliability

Because the 2200/500 is a new machine, the evaluators were unable to assess reliability under full production loads.

However, they agreed that the machine would at the very least equal the stability of their current Unisys mainframes

All evaluators had run benchmarks and stress tests that indicated performance would at least equal that of previous systems.

Computer services firm: "We have test suites to get our measurements, and from there we make inferences since we can't benchmark our entire environment. [Performance] looks at least as good as the estimates."

#### Support

As longtime Unisys shops, the evaluators had extensive experience with the company's support personnel and policies. They agreed that Unisys provided technical support in meeting their requirements.

Electrical supplies firm: "[Unisys] engineers are usually here in 15 minutes.'

Computer services firm: "We expect them to be here, and they

#### Unisys 2200/500 mainframe Ratings are based on user expecta-tions on a 1-to-5 scale, where 1 is below expectations and 5 is above expectations. Ratings are presented in order of importance to users. Overall rating Reliability Performance Support Installation Migratio Size Operation Communications Expansion

#### Installation

The evaluators reported installation times of only a few hours for hardware and software and peripheral configuration.

Electrical supplies firm: "They rolled it up the elevator, down the hall and plugged it in."

The evaluators spent from \$1 million to \$2 million on the 2200/500, including peripherals. All intended to use existing storage devices, some of which they had recently upgraded in anticipation of the 2200/500.

Printing supplies company: "The maintenance costs for hardware and software are unbelievably [low compared with previous Unisys hardware]."

#### Migration

Evaluators reported that all of their existing applications and batch utility programs would convert to the 2200/500 without

> any modification. Printing supplies compa-

ny: "It's just a matter of hooking up the disk drives. We've tested all of our applications, and all of them will be running [on the 2200/500]."

About half the size of a home refrigerator, the 2200/500 will leave many shops with a great deal of empty floor space. The printing supplies evaluator said his computer room will look like "a football field" once old mainframes have been moved out.

Computer services firm: "It's dwarfed by the peripherals and communication equipment. You'll have trouble finding it [in the computer rooml.'

#### Operation

The evaluators said operating the 2200/500 was little different from other Unisys mainframes. They anticipated no change in the size or work load of their operations staff

#### Automation

Because it would be running migrated batch and utility software, the evaluators foresaw no changes in the level or type of automation the 2200/500 offered over previous systems.

#### Expansion

Evaluators concurred that the 2200/500 is easier to expand than other mainframes. Peripherals can be added on the fly without a system reboot, and configuration is easily handled from software.

Computer services firm: "If you want to add a processor, it's a single board."

Insurance company: more memory, it will greatly outperform [existing mainframes]."

Written by Computerworld senior editor Garry Ray.

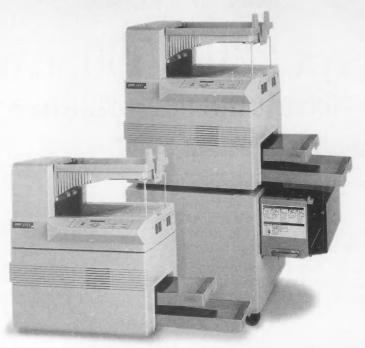
#### Unisys responds

►Third-party applications: As we roll out Posix, newly available with the OS 2200 operating system, Unisys and its customers will have increasing opportunities to nort commercial software. SX 1100, the 2200 implementation of Unix System V. provides another path.

▶Open systems: The degree of openness and standards compliance of a 2200/500 sys-

tem is unparalleled among midrange and large-scale mainframes on the market. The new Open/OLTP product suite, based on aggressive implementation of the X/Open DTP standards, is an example.

LAN support: Open 2200/500 systems offer a variety of LAN connections and services for integrating PCs. Windows, OS/2, Unix, Apple Computer, Inc. and Microsoft Corp. Windows NT systems are supported. And we are working on even more support for PC LANs.



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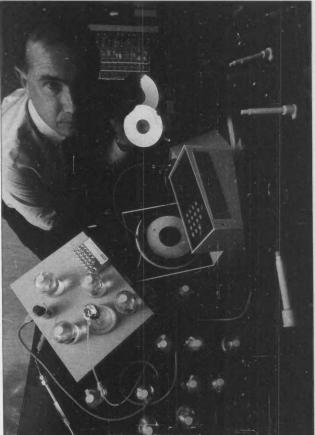
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# In Depth

# CHNOLOGY

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COMPANIES BECOME
BETA SITES FOR THE CHANCE
TO GET A JUMP ON
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Bill Reiher, vice president of central systems at Baxter International,  $says\ a\ three-month\ beta\ test\ of\ SmartStream\ ran\ up\ $3100,000\ in\ personnel\ costs$ 

# Y KIM S. NASH

The lure of outsmarting the competition and exploring new technology tempts many firms to beta-test unproven products. But it's a big leap from cracking the seal on newfangled hardware and software to running rings around your rivals by using new systems. Beta tests are expensive, time-consuming and can be a drag on the information systems staff, participants say.

Yet an estimated 50% to 60% of Fortune 1,000 firms have betatested products at one point or another, with about 20% regularly involved, according to analysts. Common reasons for putting themselves through the hard work include free staff training and unprecedented access to vendors, according to several large beta sites.

But the No. 1 reason companies test products is the opportunity to turn new technology into a way to beat competitors.

"Anything we can do to make [us]

On trial, page 112

#### In Depth: Technology on Trial

#### On trial

CONTINUED FROM PAGE 111

more attractive is going to have an impact on business," says David Cochran, technical coordinator for architecture at Delta Air Lines in Atlanta

To that end. Delta has been testing Sybase, Inc.'s next-generation database and related products to see how they fit into its vision of the "airport of the future."

Delta plans to modernize basic airport operations, such as baggage handling, passenger check-in and gate agent information at airports in all of the 217 cities and 34 countries the airline services. Delta hopes the Sybase products will help it achieve its goal of synchronizing constantly changing flight data, which is currently scattered across Delta's far-flung locations.

In the works is a scaled-down prototype of a companywide application that uses Sybase's Replication Server and Navigation Server products, which were designed to copy, collate and distribute information, in real time, between databases

#### Gaining an edge

Companies that beta-test products "can get several months or even a year ahead of the general public on figuring out how a new technology may or may not fit into their operations," says Peter Kastner, un analyst at the Aberdeen Group in Boston.

Lawton Llewellyn, chief systems officer at American General Life Insurance Co. of New York, agrees. A preview of products coming down the pike - and the opportunity to influence that technology - can be turned into IS initiatives that put beta sites ahead of the competition, he says.

Llewellyn is working with Tricord Systems, Inc. superservers. The Syracuse, N.Y.-based firm is moving 100 years of insurance policy records from 25-year-old mainframes and minicomputers to two Tricord ES/5000 machines tested early last year.

With superservers and network-

MICROSOFT churned out nearly 75,000 alpha, beta and other preproduction copies of Windows NT to about 200 users involved in testing the operating system. That's quite different from the abbreviated beta cycle that DOS 4.0 went through, says Aberdeen Group's Peter Kastner. "DOS 4.0 ended up having a lot of bugs because of that, and the release has a bad reputation to this day," Kastner says.

AT LEAST ONE-THIRD of the products that vendors put into beta every year never see the light of day, says Howard Anderson at The Yankee Group, adding that products are canceled when market conditions change, user demand shifts or vendors hit rough financial times.

FINANCIAL services, retail, transportation and telecommunications firms are most likely to beta-test products, analysts say,

POTENTIAL DISCOUNTS are thin incentive for doing beta tests. Vendors will often let beta sites keep a copy of the most current version of the product when it starts general shipping. Even so, users then must pay for maintenance and support on that product.

ing gear, he says, insurance salespeople should gain faster access to American General's 15G bytes of data, cutting processing speed from five or more minutes to a few seconds, Llewellyn says.

These companies are hot to beta, despite the drag on staff and hefty price tags associated with being a test site.

Howard Anderson, an analyst at The Yankee Group in Boston, pegs the amount at \$100,000 to \$150,000 per project.

Expenses accrue in tangible areas such as buving new hardware to accommodate upgrade re-

quirements for the new software.

For example, Westinghouse Savannah River Co. upgraded several Digital Equipment Corp. VAX 3100 machines to VAX 4000 models to handle the testing of Oracle Corp.'s Oracle 7 database," says

Suhm, Garrett leader group of manufacturing support systems.

Suhm declined to specify how much the hardware cost, saying only that "it was significant."

Less concrete are the people costs associated with taking one or two - sometimes more - IS workers off daily operations duties, at least for part of each day.

Would-be sites for Informix Software, Inc., for instance, must take staff time to design detailed project plans showing how the test product will be used in coniunction with other technologies.

Users are also expected to attend two- or three-day training classes at

Informix facilities in either Kansas or California. Once the project is under way, users must allot time for weekly conference calls with Informix engineers to talk about that week's scheduled experiments.

At Baxter International, Inc., staff members spent two days mapping out how it would put Dun & Bradstreet Software's untested SmartStream financial package through its paces, says Bill Reiher. vice president of central systems.

In the course of an initial threemonth project to test Smart-On trial, page 116

### CITICORP MORTGAGE, INC.

#### WHAT'S IN BETA?

- · Informix-OnLine database, Hyperscript, Viewpoint, other development tools
- Microsoft DOS 6.2
- Microsoft Windows 4.0

#### BUG WATCH

Citicorp Mortgage discovered "a handful" of bugs in DOS 6.2, "but only one of them would be a 'gotcha,' " says senior applications analyst Stephen Skinner, declining to elaborate.

Beta tests spur brainstorming sessions in Citicorp Mortgage's IS department.

'You get a key new product in and the possibilities pop out at you," says Stephen Skinner, senior applications analyst. It "gives you ideas about where to take IS," he says.

Citicorp Mortgage initiated a beta test of Informix's OnLine database six months ago and is studying beta and early versions of new massively parallel processing (MPP) features in databases from Oracle and Sy-

Those experiments have convinced Citicorp Mortgage to delve into MPP.



The St. Louis division of Citicorp NA plans to port mission-critical mortgage lending applications from Pick Systems' Pick operating system to an MPP version of Unix, according to Skinner. The company hasn't made a final decision on hardware, but Informix will be the database, he says.

What's more, Skinner wants to redesign key applications for client/server computing. Hence, beta tests of Microsoft Corp.'s DOS 6.2 and Windows 4.0.

#### Mind meld

Insight into vendor thinking is the best part of beta testing, Skinner says. "Engineers and other people at the companies are more forthcoming about plans because they see you're a serious customer," he says. 'You can get information you wouldn't otherwise receive."

Also valuable are informal support groups that have erupted among users beta-testing the same products

Help from the user community keeps Skinner and colleagues sane as they delve in and explore uncharted technologies.

"It's the biggest confirmation that you're not crazy," Skinner says. -Kim.S. Nash

- Microsoft Windows NT and SQL Server for NT database
- Microsoft Access
- Microsoft LAN Server

An early version of SQL Server for NT was slow at checking the consistency of the database, but Microsoft was quick to fix the bug.

Beta testing is on the rise at Chevron Canada as the firm digs further into client/server computing. Understanding how to navigate the new terrain is tough, but almost six months of beta-testing Windows NT and SQL Server for NT databases has given Chevron's 23-member IS team a sense of the future. "Beta projects give us [client/server] knowledge

something to get our arms around," says Bill Soper, manager of information services.

The only way to get hold of some of the newer, fancier functions touted in emerging products is to become a beta site, says Dan Chorney, lead database administrator. Vancouver, B.C.-based Chevron currently

uses the IBM OS/2 edition of Microsoft Corp.'s SQL Server database but wants to swap that out for NT products. "If NT is the key strategic direction for Microsoft, I'm not sure how much energy they'll put into keeping OS/2 stuff going," Soper says. Therefore, Chevron wanted to try NT products right

away to create blueprints and budgets for client/ server projects.

To outfit itself for the beta project, Chevron had to buy several 486-based servers and workstations at about \$15,000 a pop. Microsoft handed Chevron a 120-day CompuServe ID and a special technical support phone number through which to report bugs.

Beta tests have become part of everyday life at Chevron for most IS staffers. Those who participate spend an average of an hour or two per day beta testing, according

to Soper.

"If it's part of your job to help the company make decisions about the future," Chorney adds, "making time [for beta work] is a necessity.

Kim S. Nash



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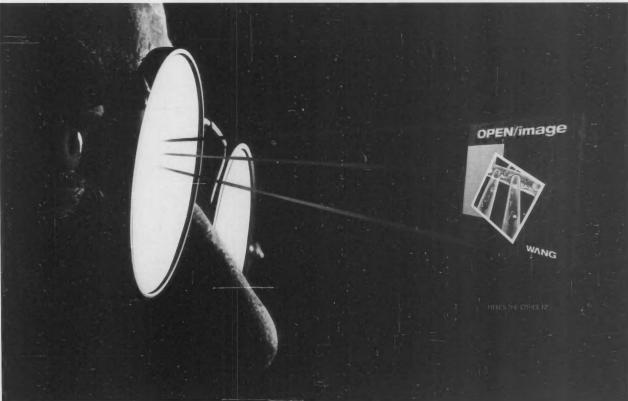
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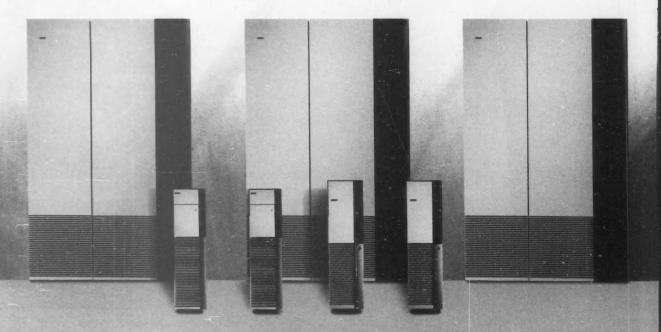
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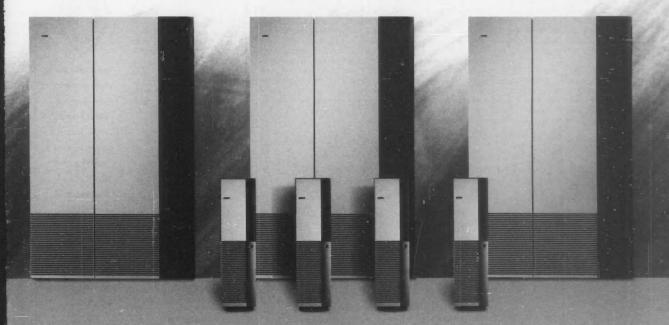
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#### In Depth: Technology on Trial

#### On trial

CONTINUED FROM PAGE 112

Stream, Baxter spent about \$100,000 in personnel costs, Reiher says. The Deerfield, Ill., company has continued to dabble with SmartStream for the past two years but is in no hurry to implement the project.

Only one shop interviewed, King County Medical Blue Shield.

is in the process of putting in place a dedicated beta staff. About 10 people out of a 500-member IS staff at the Seattle-based health maintenance organization participate in beta testing (see story at right).

King County Medical may be on to something. Some people in the trenches say the schizophrenic nature of handling everyday IS duties as well as beta testing can take a toll. "I felt a little stressed about my priorities at times," says Greg Veitch, systems analyst at Baxter.

Sometimes the beta experience is like a Pandora's box. "We saw all the fancy things [Sybase's new productsl could do and wanted to try them all out." says one database analyst at a bank. Soon, what had been a limited four-week trial with one staffer swelled to a two-person, nine-week disorganized effort that raised as many questions for the company as it answered, the analyst says

The rule of thumb in beta projects is to run them no longer than two or three months, Anderson says. "If you can't tell what a new product is going to buy you in that length of time, then something's wrong," he explains.

Being a seasoned tester can have a drawback of a nontechnical kind - popularity. Sean Dittmore, beta manager at King County Medical, which is currently testing more than \$500,000 worth of software, says his shop became a target for every software company on the planet with a product to test.

'About a year ago, we were getting calls and packages from several companies per day," Dittmore

SOME GROUND RULES for successful beta tests include the following:

**TEST PRODUCTS FROM VENDORS** ALREADY ESTABLISHED AT YOUR SHOP. Deciding on a new vendor as well as a strategic new product "is too much to gamble on," says The Yankee Group's Howard Anderson

LET NEED DRIVE TESTING. Apply test products to a real business prob Doing so will yield a concrete way to ure whether the technology works.

CONTROL THE UNKNOWNS. Do not try out new hardware with new soft A few Compaq Computer Corp. 486 servers that Baxter brought in for its SmartStream test were right out of the box. Hurried configuration of the servers meant they were unstable, Baxter systems analyst Greg Veitch says.

says. "We've had to say 'no' a lot.

One benefit that can offset any drawbacks, however, is the virtually free training IS staffers get.

Late last year, two programmers at Westinghouse Savannah River got two weeks of instruction from Oracle in the intricacies of the Oracle 7 database. "We're way ahead of other Oracle users now, Suhm says. "We have experienced staff ready to install client/server

systems."

Vendors will often send engineers on site to larger beta projects, giving IS workers instant access to product experts. Such hands-on guidance saves time and money that would have been spent on training when the beta product goes live, Kastner says

Beta testing also helps users double-check vendor-supplied information, says Ken Doolan, president of Everest Technologies, Inc.,

a Houston consulting firm. "If Sybase says it's putting in X or Y capability into its next release. I can check up on them," Doolan says. A former programmer at BP Exploration, Doolan betatests Sybase tools for the nearby oil company.

The direct access to vendor engineers that beta sites gain often yields information about what is realistic to expect from specific versions of products. "Sales types want you to think that everything you've ever wanted is in the new product," says Stephen Skinner, senior applications analyst

at Citicorp Mortgage, Inc. "But technicians tell you want you need to know." (See story page

Plus, doing a beta one year may help IS managers hone next year's budgets. Managers can know ahead of time whether a product due out next year is worth buying, says Bill Soper, manager of information services at Chevron Canada Ltd. in Vancouver. British Columbia. "It's a way of adding a little more certainty to an uncertain future," Soper says.

Nash is a Computerworld West Coast correspondent.

### KING COUNTY MEDICAL

- . Microsoft Windows NT and SQL Server for NT database
- Must Software International's Nomad Systems management tools
- . Integral, Inc.'s client/server human resource and payroll applications
- KnowledgeWare's ObjectView and Microsoft Access development tools

Most tests run two or three months, but some products don't make it beyond a few weeks. Early releases of InfoDesigner, a database designer from Asymetrix Corp., had too many bugs so King County had to put it aside. King County says it plans to reopen the beta when Asymetrix sends a more coherent version of the product.

More than \$500,000 worth of software resides in the beta-test shop at King County Medical Blue Shield in Seattle.

Microsoft Corp. is the most favored software supplier at the Seattle health maintenance organization. but client/server development and management tools from several other vendors are also being beta tested (see list above).

Once an informal process for anyone willing to put in the extra hours, beta testing at King County Medical is becoming more organized. Formalizing the process helps document projects, as well as keep track of the length of testing. The company has begun assigning specific staffers to lead tests of individual products, according to Sean Dittmore, beta manager at the organization.

Dittmore is currently handling dry runs of Windows NT products and looking into side by-side comparisons of client/ server development tools from Microsoft and KnowledgeWare.

#### Survival of the fittest

Dabbling in several kinds of preproduction offerings and pitting similar products against one another has helped King County Medical choose the best tools for the job, he says. For example, tests of various Open Database Connectivity drivers from both IBM and Microsoft proved that Microsoft drivers work more quickly and efficiently with Microsoft's Access and Visual Basic. Dittmore says.

The business side of the house approves of all this beta work "as long as we don't put anything critical on a beta product." Dittmore explains. He and about 10 other IS people spend a couple of hours each day trying out new technologies and have erected separate networks, databases and applications just for testing software.

SEAN DITTMORE AND ABOUT 10 OTHER PEOPLE SPEND A COUPLE OF HOURS EACH DAY TRYING OUT NEW TECH-NOLOGIES. THEY HAVE ERECTED SEPARATE NETWORKS, DATABASES AND **APPLICATIONS** JUST FOR TESTING SOFTWARE.

**BETA MANAGER** 

Overall, Dittmore says he likes the idea of helping to shape a preproduction product for the commercial

"If my work makes the thing better for my company,

-Kim S. Nash



#### THE FOLLOWING is a

real ad soliciting beta sites. It appeared in the second-quarter 1993 edition of "Oracle Tech." a newsletter of the International Oracle User Group (IOUG).

THE IOUG AND ORACLE SUPPORT DIVISION ARE WORKING TOGETHER TO FIND QUALIFIED BETA TEST SITES FOR NEW ORACLE PRODUCTS. ALL BETA SITES SHOULD BE PREPARED TO:

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Oim NewFileNum As Integer

INST REPLACEFILE = 1

Dim Action As Integer

Dim FileExists As Integer

On Exor GoTo Opener

INST RANDOMFILE = 4

plobal variables to hold the file number and record number

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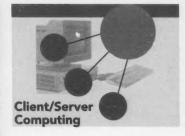
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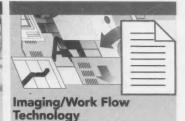
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Computerworld magazine say IBM needs
to hire a CEO with a technology background. With lit Gerstner lacking such a
pedigree, "he's going to be on werx very
steep learning curve," says lissist Hanna,
a former IBM executive who is now president of Hanna Group, a computer-consulting.

THE WALL STREET JOURNAL March 25th, 1993

#### Computers & Automation

"Information systems managers are grasping (ant) this as Holy Grail," said Paul Gillin, executive editor of

**Investor's Business Daily** 

March 25th, 1993

EEK, THERE'S A MUUNE in the corr

to the percentage of executives who diarly use computers nearly doubled in years, to 11% from 2% in 1885, says a toy by Computerworld magazine and Ansen Consulting. Fewer than half think are getting their money's worth from torate computer systems.

THE WALL STREET JOURNAL April 20th, 1993

eir question: Where are the productivity savings?

The New Hork Times April 25th, 1993

ORPORATE executives appear to be more knowledgeable about computer technolgy than ever before, but they have also become more demanding and less orgiving, a new survey has found While they believe information technologies are the key to competitive advantage, they also say that they have not been getting their money's worth The survey, conducted by the com-

puter industry newspaper, Computer-world and Andersen Consulting, also found that 81 percent of top executives are personally using computers in their daily jobs, nearly double the percentage reported when the survey was first taken four years ago. More than 200 chief executives,

chief operating officers, and chief fi-nancial officers, representing a broad range of businesses, participated in the study, the results of which were published in Computerworld last week. Annual company sales ranged from \$250 million to \$20 billion.

> The New Hork Times March 25th, 1993

#### AL CUSTOMERS MAVE THEIR SAY TOO

BIM directors should forget about hiring another salesguy to replace John Akers as CEO. And whoever he is, Aker's successor should fire a whole lot more people. So says a Computer-world survey of executives 21 100 companies that spend at least half their computer budgets on IBM products. The participants, who work at the likes of Kmart and Parker Hannifin, a maker of neumatic and hydraulic components, also said IBM's reorganization into smaller business units should go further. Computer-world, in addition, interviewed various computer industry luminaries, including Steve Jobs. The Next CEO marveled that none of IBM's machines from mainframes to ■ IBM directors should forget

machines from mainframes to PC's uses the same software. Says Jobs: "IBM's troubles stem from the fact that they aproach everything from a h

roach everytning from a naro-ware strategy, and the Nineties is a software decade."

Not everybody agreed that breaking up is the way for IBM to go. Said Larry Ellison, CEO and co-founder of Oracle, a software company: "This is the

anu ns. her, Richard is a reinred I.B.M. vice president.
A survey of some 100 of I.B.M.'s largest customers by Computerworld magazine found that 51 percent preferred someone with a technical background to be the computer giant's new chief executive, while 36 percent said technical experise was not essential and 13 percent had no copinion. FORTUNE II

**FORTUNE** April 5th, 1993

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# Conference Call



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# **Computer Careers**



By David Baum

Application development vendors have been quick to present solutions that make

building client/server applications look like child's play. But once programmers attempt to create complex, heterogeneous, enterprisewide applications, they find that broad skill sets, both old and new, are needed to complete the job.

Many programmers, for instance, have picked up one of the rapid application builder products such as Powersoft Corp.'s PowerBuilder or Gupta Corp.'s SQLWindows. Great for quickly pulling together tactical, client-centric applications, these products can quickly enhance a programmer's knowledge - and career options.

However, a programming team may run into obstacles when creating complex, heterogeneous applications.

#### Client/server changes

Part of the difficulty, explains Nick Wybolt, director of technical architecture at Andersen Consulting's Foundation division in Chicago, comes with the architectural changes brought on by client/ server. With host-based systems, data communication consists of sending data from the mainframe to a 3270 terminal: network administrators handle the rest. With client/server, however, network communication becomes an essential part of the development process, often involving low-level communication cod-

In large-scale client/server systems development, hiring managers look for a balance of new development tools with a working knowledge of old standby languages

OLD AND NEW

- Mainstream compiled languages such as Cobol, Ada and Fortran.
- Enterprise modeling and structured development methodologies.
- · Procedural, waterfall development methodologies.
- Specific network topologies and protocols such as TCP/IP and LU6.2.
- Flat-file and hierarchical

- SQL relational databases

Source: Andersen Consulting, Chicago: Graphic User Interfaces, Inc., Redwood City, Calif.

ing based on protocols such as Named Pipes, NetBIOS and TCP/IP, as well as familiarity with many different platforms.

"The danger some programmers face is that they become so enamored with the new operating systems that they forget the rest of the world," Wybolt says. To me, the ideal client/server programming candidate is someone who can work with the new windowing environments but also brings other systems experience."

For instance, a heterogeneous client/ server application might be based on a three-tiered architecture, where Windows clients access relational data from Unix servers on a LAN and also interface with a corporate database on a mainframe running a CICS transaction monitor. Creating such a system requires knowledge of all the platforms and operating systems involved, Wybolt says, as well as experience with application partitioning.

To ease the burden of interapplication communication, some companies rely on middleware, a software layer that sits between the network and the application. Middleware shields developers from low-level networking complexities by enabling them to write applications based on a common, system-level application programming interface.

#### Time-saver

Alex Bakman, a senior systems consultant at Unum Life Insurance in Portland, Maine, says middleware saves corporate programmers a lot of time with low-level communication coding, making it an essential tool for client/server developers.

Some high-end development tools have middleware integrated with the overall environment, such as Andersen Consulting's Foundation for Cooperative Processing. Programmers can also turn to one of the stand-alone products such as Peer Logic, Inc.'s Pipes or TransAccess from Netwise, Inc. in Boulder, Colo.

Whatever the mix of old and new, it is m mistake to base your career on expertise in one particular language or tool. "It's the guy with a true systems-level view that companies are paying a lot of money for," says Bill Jacobs, marketing vice president at Netwise. "Step back and try to understand technologies that are not only on your block but maybe one block

Baum is a free-lance writer in Santa Barbara, Calif., who specializes in emerging technologies

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#### Exploring some avenues to 'real code'

Writing batch files, XBase provides foundation for place in development project



BY DAVID MICHAEL BERNARD

Bernard is a technology management consultant at **Omicron Consulting.** an international consulting and services firm that provides analysis, development and implementation of **business information** systems.

I am a PC support technician at a large company. I have experience writing batch files and know a bit of dBase, but I want to sink my teeth into real code. A new development project has created several openings. Do I have a chance?

There are many ways you can fit into a development team, and you have a small foundation to work from right now. For instance, writing batch files and XBase code is programming experience. Designing dBase databases will also help you work in a database analyst capacity.

Start by determining the project's nature and decide how you want to fit into it. If possible, get a copy of the tools and familiarize yourself by building your own applications.

If only advanced programming positions are available, prepare by getting hands-on experience writingreal code. In addition, try using the traditional methods such as classroom training and reading hooks.

I am an information systems manager in a midsize company and have been charged with converting our office from a largely DOS-based environment to Windows. What issues should I focus on?

The steps I've success fully used in a Windows rollout include the following:

· Define the application suite.

· Identify DOS-only requirements. Certain communications packages must be run within DOS. If packages require significant conventional memory, a third-party memory manager may be required, which will add to your total

- · Assess hardware inventory. Test the new application suite on current hardware for acceptable performance.
- ·Upgrade or purchase hardware when necessary.
- · Divide the hardware domain into types and create standard configurations. Different makes, models and configurations may require different setups. Grouping hard-

ware by type will ease installation and maintenance.

- · If implementing on a LAN, determine how Windows and the applications will be installed. Server installations case maintenance but slow the network. Client installations perform better but are difficult to maintain.
- · Consider training and support the most important issue. Even with an ingenious design, projects will fail if training is not begun well in advance.

As a corporate developer, I feel I am not growing technically. What should I focus on to keep current?

Developers should focus on Windows and client/server architecture. As far as programming tools go, C, C++, Visual Basic and Visual C++ are hot. If you do not have experience using one of these tools, buy one today, and be sure to start writing object-oriented code.

Client/server development experience is harder to obtain outside the workplace. Ideally, a developer's skill set should include at least one high-level client/ server development tool, such as Powersoft Corp.'s PowerBuilder or Gupta Corp.'s SQLWindows. These tools, however, are priced beyond a programmer's disposable income.

You can take advantage of Microsoft Corp.'s Access, which provides a similar environment to PowerBuilder at a fraction of the

I recently assumed responsibility for our software library. What should my main concerns be?

Address three basic issues: inventory, upgrades and licensing. As new disks come in, print out their directory and number them along with the disk before filing for easy access. To keep on top of software updates, regularly canvas software vendors because they won't always come to you.

Lastly, ensure that the company follows software license agreements to the letter by securing software and manual storage. Additionally, be sure to work with the network manager to monitor

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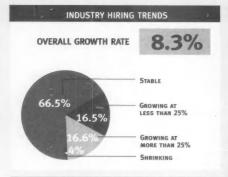
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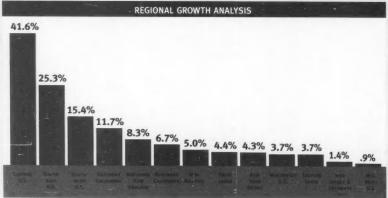
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# **Marketplace**

#### Time saving tools

By Alice Bredin

Hundreds of utilities on the market help shave a few minutes off the work day or make certain tasks a little easier. While some of these tools are household names, others are not. In a search for some of the more helpful ones, we asked a few information systems pros to nominate the tools they couldn't live without.

Bredin is a free-lance writer in New York.

Amidiag is an advanced diagnostics program for PCs.

Benefits Jeffrey Joll, senior technical services representative at Jurisoft Corp. in Cambridge, Mass., says Amidiag has found system memory problems that other packages have not. "If I'm having trouble with the software or with anything on the network, I can verify if it's a PC memory problem or something else."

This replaces the menu that comes with Novell's network operating system, which Barbara Vernon Ryan, network manager at Specialty Brands in San Francisco, calls inflexible and boring.

Benefits The best part about it, says Vernon Ryan, is that it "enables users to create customized menus. It also requires no RAM.'

Bindview is a network report, documentation and inventory package for Novell, Inc. net-

Banefits Bindview can print 500 pages of documentation in about two hours, says Wayne Robertson, LAN administrator at Saint Agnes Medical Center in Fresno, Calif. "Our big issue is getting back up when the network crashes. This gives us the information we need.

Pathfinder examines, collects and prints out data about network devices.

Benefits "This information cuts programming time by about 5% per project by reducing the time spent researching what's on the network," says Irving Ladue, IS manager at Data East, Inc., in Weare, N.H. "We can also print out the entire network and have it in front of us in map form.

Michael Sharpe at Midlands Technical College in Columbia, S.C., says the Norton Disk Doctor is the most comprehensive diagnostic package he has used.

Benefits "It diagnoses a problem in your boot sector and allows you to boot from a floppy so it can fix it for you. Other diagnostic packages don't tell you much.

Ken Burton, an operating systems specialist at Hannaford Bros. Co. in Portland, Maine, nominates this utility, which he says many people don't know

Benefits It enables users to examine and manipulate data in many ways. "if we didn't have it, we'd have to write our own code.

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| Compaq Prolinea 4/66 | \$1,900                  |
| Prolinea 486/50      | \$1,400                  |
| Portable 386         | \$575                    |
| SLT-386              | \$775                    |
| LTE-286              | \$500                    |
| Prosigna 486/66      | \$3,850                  |
| Apple Macintosh SE   | \$475                    |
| HCX                  | \$1,000                  |
| IICI                 | \$1,200                  |
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| Oberon Software  Diplet Design, Inc  Diplet Design, Inc  Diplet Design, Inc  Dir Associates, Inc  Percacific Gas & Electric Co.  Taper Software, Inc  Per Logic, Inc  Per Logic, Inc  Per Hose Systems, Inc  Per Hose Systems, Inc  Per Hose Systems, Inc  Per Jaffray, Inc  Platinum Software Corp  Powersoft Corp   | . 75<br>123<br>138<br>143<br>143<br>20<br>20<br>37<br>72<br>122<br>22<br>47<br>72<br>24<br>47<br>55<br>55<br>29<br>29<br>55<br>48<br>138<br>. 75<br>. 76<br>. 77<br>. 72<br>. 72<br>. 72<br>. 72<br>. 72<br>. 72<br>. 72 |
| Oberon Software.  bljeef Design, Inc.  micron Consulting  practe Corp. 8,16,29,38,63,73,111,  pr Associates, Inc.  Proceeding of the Comment | .75 123 138 .43 .20 .37 .72 122 .47 .72 .29 .55 .29 .55 .48 .7617677   |

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#### **Wednesday Stock Ticker**

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### Communications stocks not for the fainthearted

For the past month DSC Communications Corp. (DIGI) has been bouncing up and down like a yo-yo. The stock has been on one side or the other of the top gainers and losers chart for five weeks running. And Newbridge Networks Corp. (NNXCF) has oscillated right alongside it.

Analysts pointed to a variety of factors for the volatility of stocks in broadband communications, including momentum investors, industry announcements and profit taking.

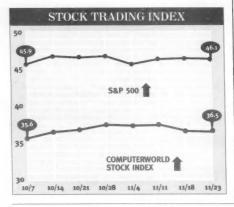
"They are victims of their own past success," said Bob Kim, analyst at S.G. Warburg & Co. "After having exceeded everyone's expectations for several quarters, Newbridge has only met expectations [in the most recent quarter]. So all of a sudden momentum players get out of the stock," Kim early

"DSC's stock has run up substantially in the past 12 months. People had such good profits, they just took them," selling the stock and pushing the share price down, said James Hartke, director of research at Laidlaw Holdings.

Analysts agreed that while the stocks may not settle down immediately, these companies enjoy good long-term possibilities. "Everybody's results were strong, and the next quarter looks promising as well," said James Kedersha, Cowen & Co. vice president.

"I expect them to rise even in the short term — if you measure short term as anything longer than a week," Hartke

—Derek Slat



| Ехсн | 52-WEE   | k RANGE  |                             | Nov. 241<br>3 PM ( | NK NET I  |       |
|------|----------|----------|-----------------------------|--------------------|-----------|-------|
| Cor  | nmunicat | ions and | Network Services            | ~~ <u>_</u>        | · lill o. | 01%   |
| OTC  | 40.00    | 19.63    | 3 COM CORP.                 | 35.50              | 2.25      | 6.8   |
| NYS  | 91.13    | 66.50    | AMERICAN INFO TECHS CORP.   | 77.13              | 0.38      | 0.5   |
| NYS  | 65.00    | 46.75    | AT&T                        | 55.88              | -0.38     | -0.7  |
| OTC  | 4.44     | 0.94     | ARTEL COMMUNICATION CORP.   |                    | 0.00      |       |
| OTC  | 24.50    | 12.50    | BANYAN SYSTEMS INC.         | 22.00              | -0.25     | -1.1  |
| NYS  | 69.13    | 46.75    | BELL ATLANTIC CORP.         | 58.13              | ~1.00     | -1.7  |
| NYS  | 63.88    | 48.13    | BELLSOUTH CORP.             | 55,25              | 0.50      | 0.9   |
| NYS  | 14.75    | 4.25     | BOLT, BERANEK & NEWMAN      | 11.25              | -0.38     | -3.2  |
| OTC  | 18.50    |          |                             | 13.00              | -0.75     | -5.5  |
| NYS  | 119.00   | 70.75    | CABLETRON SYSTEMS           | 97.88              | 3.13      | 3.3   |
| OTC  | 36.50    | 11.25    | CENTIGRAM COMMUNICATIONS    | 32.75              | 5.50      | 20.2  |
| OTC  | 55.50    |          | CHIPCOM CORP.               | 46.25              | 1.00      | 2.2   |
| OTC  | 59.25    | 34.38    |                             | 56.75              | 0.75      | 1.3   |
| OTC  | 18.38    | 8.00     |                             | 13.25              |           | -10.2 |
| OTC  | 36.00    | 21.75    |                             | 26.25              |           | -10.3 |
| OTC  | 4.63     | 1.75     | DATA SWITCH CORP.           | 2.00               | 0.13      | 6.7   |
| NYS  | 19.88    | 12.38    | DIGITAL COMM. ASSOC.        | 18.75              | 0.00      | 0.0   |
| OTC  | 12.00    | 3,50     | DIGITAL SYSTEMS INT'L INC.  |                    | -0.13     | -3.3  |
| OTC  |          | 17.75    | DSC COMMUNICATIONS          | 57.13              | -1.75     | -3.0  |
| OTC  | 9.50     | 4.75     | FIBRONIX INT'L INC.         | 5.75               | 0.13      | 2.2   |
| OTC  | 23.75    |          | FILENET CORP.               | 18.00              |           | 0.0   |
| OTC  | 4.38     | 1.63     | GANDALF TECHNOLOGIES INC.   | 2.88               | 0.00      | 0.0   |
| OTC  | 2.06     | 0.69     | GATEWAY COMMUNICATIONS      | 1.03               | 0.06      |       |
| NYS  | 15.75    | 4.63     | GENERAL DATACOMM INDS.      | 10,00              | -0.13     | -1.2  |
| ASE  | 3.63     | 2.00     |                             | 2.44               | 0.00      | 0.0   |
| NYS  | 39.88    | 33.13    |                             | 36.75              | 0.25      | 0.7   |
| NYS  |          | 69.00    | ITT CORP.                   | 91.88              | -1.13     | -1.2  |
| OTC  | 29.88    | 18.44    |                             | 25.00              | 0.63      | -2.4  |
| OTC  | 6.50     | 1.50     | MICROCOM INC.               | 3.88               | 0.25      | 6.9   |
| OTC  | 24.25    | 3,50     | NETRIX CORP.                | 6.50               | 0.38      | 6.1   |
| OTC  | 19.00    | 6.50     |                             | 7.25               | -0.25     | -3.3  |
| NYS  |          | 5.38     |                             | 9.88               | -0.13     | -1.3  |
| OTC  | 20.13    | 8.00     | NETWORK GENERAL             | 13.50              | 0.25      | 1.9   |
| OTC  | 15.00    | 6.88     | NETWORK SYSTEMS CORP.       | 8.25               | 0.25      | 3.1   |
| OTC  | 73.88    | 14.75    | NEWBRIDGE NETWORKS CORP.    | 54.88              | -0.88     | -1.6  |
| NYS  | 46.00    | 21.38    |                             | 29.38              | -0.25     | -0.8  |
| OTC  | 35.25    | 17.00    | NOVELL INC.                 | 23.25              | 0.13      |       |
| NYS  | 48.88    | 40.31    | NYNEX CORP.                 | 42.13              | 0.88      | 2.1   |
| OTC  | 30.00    | 19.00    |                             | 25.25              | -0.75     | -2.9  |
| OTC  | 6.13     | 3.75     |                             | 5.13               |           | -4.7  |
| OTC  | 30.50    | 14.50    | PICTURETEL CORP.            | 20,13              | -0.50     | -2.4  |
| OTC  | 11.50    | 3.63     | PROTEON INC.                | 6.69               |           | -6.1  |
| NYS  | 38.88    | 17.75    | SCIENTIFIC ATLANTA INC.     | 31.75              |           | 2.0   |
| NYS  | 47.00    | 34.19    |                             | 40.00              | -1.00     | -2.4  |
| NYS  |          | 24.38    |                             | 33.25              | -0.38     | -1.1  |
| OTC  | 27.00    | 12.50    | STANDARD MICROSYSTEMS CORP. | 21,88              | -1.25     | -5.4  |
| OTC  | 19.75    | 10.00    |                             | 17.25              | 0.25      | 1.5   |
| OTC  | 42.75    | 20.00    |                             | 27.88              | 1,13      | 4.2   |
| OTC  | 9.88     | 2.88     | TELEBIT CORP.               | 6.88               | 0.00      | 0.0   |
| OTC  | 17.88    | 5.13     |                             | 14.38              |           | -4.2  |
| OTC  | 35.25    | 17.00    |                             | 25.38              |           |       |
| NYS  |          | 37.00    |                             | 45.88              |           | -1.3  |
| OTC  | 58.25    | 29.50    |                             | 57.25              | 2.00      | 3.6   |
| OTC  | 19.50    | 7.25     | XIRCOM                      | 14.75              | -0.75     | -4.8  |
| 100  | d 191    |          |                             |                    | -         |       |

| PC   | and Wor | kstation |                         |       | OFF o. | 37%  |
|------|---------|----------|-------------------------|-------|--------|------|
| OTC  | 5,56    | 2.50     | ADVANCED LOGIC RESEARCH | 3.50  | 0.00   | 0.0  |
| OTC  | 65.25   | 22.00    | APPLE COMPUTER INC.     | 33.00 | -0.25  | -0.8 |
| OTC  | 24.25   | 12.75    | AST RESEARCH INC.       | 22.25 | -0.25  | -1.1 |
| NYS. | 9.25    | 2.50     | COMMODORE INT'S         | 3.88  | 0.00   | 0.0  |
| NYS  | 70.00   | 40.63    | COMPAQ COMPUTER CORP.   | 68.75 | 1.75   | 2.6  |
| OTC  | 49.88   | 13.50    | DELL COMPUTER CORP.     | 24.00 | 0.25   | 1.1  |
| NYS. | 89.25   | 62.88    | HEWLETT PACKARD CO.     | 71.50 | -1.38  | -1.9 |
| NYS. | 46.75   | 23.50    | SILICON GRAPHICS        | 42.00 | -1.13  | -2.6 |
| OTC  | 41.00   | 21.13    | SUN MICROSYSTEMS INC.   | 26.13 | -0.38  | -1.4 |
| NYS  | 48.00   | 24.63    | TANDY CORP. (H)         | 45.88 | 0.00   | 0.0  |
| OTC  | 7.00    | 2.50     | ZEOS INTERNATIONAL LTD. | 4.00  | 0.00   | 0.0  |

| Large Systems |        |       |                         |        | OFF 1. | 57%  |
|---------------|--------|-------|-------------------------|--------|--------|------|
| ASE           | 8.50   | 4.38  | AMDAHL CORP.            | 4.94   | 0.06   | 1.3  |
| NYS           | 8.75   | 3.63  | CONVEX COMPUTER         | 5.25   | -0.25  | -4.5 |
| OTC           | 5.38   | 2.25  | CRAY COMPUTER           | 2.75   | 0.00   | 0.0  |
| NYS           | 30.88  | 20.38 | CRAY RESEARCH INC.      | 26.75  | 0.25   | 0.9  |
| NYS           | 13.88  | 7.75  | DATA GENERAL CORP.      | 9.75   | 0.38   | 4.0  |
| NYS           | 49.25  | 30.38 | DIGITAL EQUIPMENT CHEP. | 36.00  | -0.38  | -1.0 |
| NYS           | 47.38  | 32.50 | HARRIS CORP.            | 45.25  | 0.25   | 0.6  |
| NYS.          | 68.88  | 40.63 | IBM                     | 53.13  | 1.25   | 2.4  |
| OTC           | 25.75  | 10.25 | KENDALL SQUARE RESEARCH | 10.75  | -1.00  | -8.5 |
| NYS           | 141.50 | 87.00 | MATSUSHITA ELECTRONICS  | 128.00 | -6.25  | -4.7 |
| OTC           | 23.75  | 12.75 | NETFRAME.               | 16.00  | 0.00   | 0.0  |
| OTC           | 26.00  | 9.25  | PARALLAN COMPUTER       | 15.75  | -0.75  | .4.5 |
| OTC           | 23.25  | 8.50  | PYRAMID TECHNOLOGY      | 14.88  | 0.63   | 4.4  |
| OTC           | 24.00  | 11.25 | SEQUENT COMPUTER SYS.   | 16.50  | -0.38  | -2.2 |
| OTC           | 6,00   | 1.38  | SEQUOIA SYSTEMS INC.    | 4.56   | -0.44  | -8.7 |
| NYS           | 41.25  | 20.25 | STRATUS COMPUTER INC.   | 27.38  | -1.00  | -3.5 |
| NYS           | 16.88  | 8.50  | TANDEM COMPUTERS INC.   | 10.38  | -0.63  | -5.7 |
| OTC           | 27.50  | 10.63 | TRICORD SYSTEMS         | 24.25  | 0.25   | 1.0  |
| NYS           | 13.88  | 8.50  | UNISYS CORP.            | 11.50  | -0.13  | -1.1 |

| Suff | lwaie |       |                         |       | UH o. | 77%  |
|------|-------|-------|-------------------------|-------|-------|------|
| OTC  | 37.00 | 14.50 | ADOBE SYSTEMS INC.      | 22.13 | 1.38  | 6.6  |
| OTC  | 25.25 | 11.75 | ALDUS CORP.             |       | 0.75  | 3.7  |
| OTC  | 9.25  | 5.50  | AMERICAN SOFTWARE INC.  | 6.25  | -0.38 | 5.7  |
| OTC  | 28.13 | 9.50  | ASK COMPUTER SYSTEMS    | 14.00 | 0.38  | 2.8  |
| OTC  | 56.75 | 37.00 | AUTODESK INC.           | 42.75 |       | -1.4 |
| OTC  | 7.25  | 2.38  | BACHMAN INFO. SYSTEMS   |       | 0.00  | 0.0  |
| OTC  | 42.00 | 24.00 | BGS SYSTEMS INC.        | 27.25 | 2.25  | 9.0  |
| OTC  | 84.13 | 38.75 | BMC SOFTWARE INC.       | 47.75 | -1.00 | -2.1 |
| OTC  | 28.25 | 20.38 | BOOLE & BABBAGE         | 26.13 | -0.38 | -1.4 |
| OTC  | 27.25 | 12.75 | BORLAND INT'L INC.      | 16.63 |       | 4.7  |
| OTC  | 4.63  | 2.75  | CE SOFTWARE             | 3.13  | -0.13 | -3.8 |
| ASE  | 40.25 | 16.41 | CHEYENNE SOFTWARE INC.  | 30.50 | 2.13  | 7.5  |
| OTC  |       | 8.25  | CHIPSOFT                | 17.00 |       | -2.9 |
| OTC  | 10.50 | 5.63  | COGNOS INC.             | 8.88  | 0.13  | 1.4  |
| NYS  | 44.25 | 17.63 | COMPUTER ASSOCIATES (H) | 40.00 | -1.13 | -2.7 |
| NYS  | 6.50  | 2.13  | COMPUTERVISION CORP.    | 3.13  | -0.13 |      |
| OTC  | 34.25 | 19.25 | COMPUWARE CORP.         | 26.25 | 2.13  | 8.8  |
| OTC  |       | 5.75  | COMSHARE INC.           | 9.75  | 0.00  | 0.0  |
| OTC  | 37.00 | 10.75 | COREL CORP.             | 30.25 | -1.25 | -4.0 |
| OTC  | 15.25 | 4.00  | EASEL CORP.             | 4.00  | -0.25 | -5.9 |
| OTC  | 25.25 | 15.75 | 4TH DIMENSION           | 19.88 |       | -9.1 |
| OTC  | 19.25 | 5.25  | FRAME TECHNOLOGY        | 9.63  | -0.13 | -1.3 |
| OTC  | 17.50 | 8.00  | GROUP I SOFTWARE        | 9.00  | -1.50 |      |
| OTC  | 35.25 | 14.00 | GUPTA                   | 14.88 | -0.38 | -2.5 |
| OTC  | 12.00 | 4,88  | HOGAN SYSTEMS INC.      | 10.25 | 0.00  | 0.0  |
| OTC  | 27.75 | 11.25 |                         | 23.50 |       |      |
| OTC  | 44.75 | 27.00 | INFORMATION RESOURCES   | 34.38 | -1.63 | -4.5 |
| OTC  | 27.25 | 13.38 | INFORMIX CORP.          | 18.25 | 0.75  | 4.3  |
| OTC  | 14.00 | 8.50  | INTERGRAPH CORP.        | 10.00 | 0.38  | 3.9  |

| Ехсн | 52-WEE | K RANGE |                            | Nov. 241<br>3 PM ( |       |      |
|------|--------|---------|----------------------------|--------------------|-------|------|
| DTC  | 13.63  | 4.88    | INTERLEAF INC.             | 7.25               | 0.00  | 0.0  |
| OTC  | 15.25  | 4.75    | INTERSOLV INC.             | 9.25               | 0.50  | 5.7  |
| OTC  | 18,25  | 7.75    | KNOWLEDGEWARE INC.         | 15.25              | 0.00  | 0.0  |
| OTC  | 54.75  | 15.50   | LEGENT CORP.               | 24.00              | 0.50  | 2.1  |
| OTC  | 50.75  | 18.75   | LOTUS DEVELOPMENT          | 46.13              | -0.63 | -1.3 |
| OTC  | 23.00  | 4.25    | MATHSOFT                   |                    | -0.50 | -7.5 |
| OTC  | 21.25  | 4.50    | McAFEE ASSOCIATES          | 6.25               | 0.00  | 0.0  |
| OTC  | 11.63  | 3.38    | MECA SOFTWARE              | 6.38               | -0.25 | -3.8 |
| OTC  | 13.75  | 7.63    | MENTOR GRAPHICS            | 13.38              | -0.13 | -0.9 |
| OTC  | 46.00  | 19.50   | Micro Focus (L)            | 20.13              | -0.13 | -0.6 |
| OTC  | 13.25  | 4.38    | MICROGRAFX INC.            | 7.50               | -0.13 | -1.6 |
| OTC  | 98.00  | 70.38   | MICROSOFT CORP.            | 77.38              | -2.88 | -3.6 |
| OTC  | 33.00  | 9.44    | ORACLE CORP. (H)           | 31.50              | 1.00  | 3.3  |
| OTC  | 44.75  | 22.50   | PARAMETRIC TECHNOLOGY      | 38.00              | 3.25  | 9.4  |
| OTC  | 40.50  | 23.50   | PEOPLESOFT                 | 28,13              | -0.75 | -2.6 |
| OTC  | 7.13   | 3.50    | PHOENIX TECHNOLOGIES       | 4.00               |       | -7.3 |
| OTC  | 40.00  | 22.00   | POWERSOFT                  | 33,50              |       | 3.1  |
| OTC  | 39.75  | 13.50   | PLATINUM SOFTWARE          | 24.25              | 0.88  | 3.7  |
| OTC  | 25.00  | 7.25    | PLATINUM TECHNOLOGY        | 9.50               | -0.25 | -2.6 |
| OTC  | 61.50  | 32.25   | PROGRESS SOFTWARE CORP.    | 49.75              | 0.50  | 1.0  |
| OTC  | 6.63   | 1.94    | QUARTERDECK OFFICE SYS.    | 2.25               | -0.06 | -2.7 |
| OTC  | 32.00  | 16.00   | RAINBOW TECHNOLOGIES INC.  | 20.50              | -1.00 | -4.7 |
| OTC  | 11.38  | 4.25    | RASTEROPS                  | 7.25               | -0.25 | -3.3 |
| OTC  | 15.25  | 6.50    | ROSS SYSTEMS               | 7.63               | -0.63 | -7.6 |
| OTC  | 28.75  | 17.25   | SAPIENS INTL. CORP. N.V.   | 22.25              | 1.13  | 5.3  |
| OTC  | 14.50  | 5.50    | SOFTWARE PUBLISHING CORP.  | 6.13               | -0.13 | -2.0 |
| OTC  | 17.25  | 5.25    | SOFTWARE TOOLWORKS INC.    | 12.88              | -0.25 | -1.9 |
| OTC  | 2.88   | 0.75    | SPINNAKER SOFTWARE         | 2.41               | 0.16  | 6.9  |
| OTC  | 13.75  | 6.50    | STATE OF THE ART           | 8.25               | -0.50 | -5.7 |
| NYS  | 33.63  | 17.63   | STERLING SOFTWARE INC.     | 27.00              | -1.50 | -5.3 |
| OTC  | 21.63  | 9.63    | STRUCT, DYNAMICS RESEARCH  | 17.75              | -0.13 | -0.7 |
| OTC  | 38.75  | 19.13   | SYBASE INC.                | 36,75              | 2.63  | 7.7  |
| OTC  | 20.50  | 9.25    | SYMANTEC CORP.             | 16.88              | -0.75 | -4.3 |
| OTC  | 25.50  | 10.00   | SYSTEM SOFTWARE ASSOC.     | 14.00              | -0.75 | -5.1 |
| OTC  | 6.50   | 2.75    | TRINZIC CORP.              | 5,38               | -0.25 | -4.4 |
| OTC  | 26.50  | 13.50   |                            | 21.00              | -1.13 |      |
| OTC  | 22.50  | 5.50    | WALKER INTERACTIVE SYSTEMS | 8.75               | -0.25 | -2.8 |
| OTC  | 3.19   | 0.84    | WORDSTAR                   | 1.28               | 0.03  | 2.5  |

| Ser        | 15   28.00   13.25   ANACO DEVICES INC. |       | 90%                         |       |       |      |
|------------|---|-------|-----------------------------|-------|-------|------|
| IYS.       | 32.88                                   | 14.25 | ADVANCED MICRO DEVICES      | 18,50 | -0.13 | -0.7 |
| IYS        | 28.00                                   | 13.25 | ANALOG DEVICES INC.         | 22.50 | 0.38  | 1.7  |
| OTC        | 38.63                                   | 14.75 | ATMEL CORP.                 | 24.75 |       | -1.5 |
| OTC        | 6,63                                    | 2.75  | CHIPS AND TECHNOLOGIES      | 6.50  | 0.00  | 0.0  |
| OTC        | 39.75                                   | 13.00 | CIRRUS LOGIC                | 33.13 | -0.25 | .0.7 |
| IYS        | 16.75                                   | 8.63  | CYPRESS SEMICONDUCTOR CORP. | 13.25 | 0.63  | 5.0  |
| IYS.       | 19.00                                   | 11.75 |                             | 14.13 |       | -2.6 |
| STC        | 74.50                                   | 35.50 | INTEL CORP.                 | 58.88 | 0.38  | 0.6  |
| IYS        | 19.25                                   | 8.88  | LSI LOGIC CORP.             | 14.63 | 0.13  | 0.9  |
| OTC        | 26.75                                   | 12.25 | LATTICE SEMICONDUCTOR (L)   | 13.50 |       | 5.9  |
| NYS        | 63.63                                   | 16.25 | MICRON TECHNOLOGY           | 43.75 | 4.88  | 12.5 |
| IYS        | 107.50                                  | 48.75 | MOTOROLA INC.               | 95.88 | 0.38  | -0.4 |
| VYS.       | 21.75                                   | 10.13 | NATIONAL SEMICONDUCTOR      | 17.00 | 1.13  | 7.1  |
| OTC        | 15.75                                   | 6.50  | SIERRA SEMICONDUCTOR        | 8.25  | 0.13  | 1.5  |
| <b>ЭТС</b> | 52.75                                   | 25.75 | SYNOPSYS                    | 46.63 | 1.75  | 3.9  |
| NYS        | 84.25                                   | 45.13 | TEXAS INSTRUMENTS           | 64.00 | 4.38  | 7.3  |
| OTC.       | 18.88                                   | 6.50  | VLSI TECHNOLOGY             | 14.00 | 0.63  | 4.7  |
| OTC        | 14.38                                   | 4.75  | WEITER                      | 9.38  | 0.00  | 0.0  |
| ASE        | 10.25                                   | 3.63  | WESTERN DIGITAL CORP.       | 9.25  | -0.50 | -5.1 |
| OTC        | 54.50                                   | 20.25 | XILINX                      | 40.63 | 3.13  | 8.3  |
| DTC        | 40.75                                   | 19,00 | ZILOGÍNC.                   | 26.75 | -2.50 | -8.5 |

| Per  | ipherals |       | OFF 1.                     | 55%    |       |       |
|------|----------|-------|----------------------------|--------|-------|-------|
| OTC  | 24.75    | 10.50 | AMERICAN POWER CONVERSION  | 19.00  | 0.50  | 2.7   |
| OTC  | 22.75    | 15.50 | BANCTECING.                | 20.63  | -0.38 | -1.8  |
| OTC  | 17.50    | 3.50  | CAMBEX CORP.               | 4.50   | -0.75 | -14.3 |
| ASE  | 18.38    | 3.88  | COGNITRONICS CORP.         | 4.63   | 0.13  | 2.8   |
| NYS  | 25.50    | 9.00  | CONNER PERIPHERALS         | 13.25  | -0.50 | -3.6  |
| DTC  | 38.50    | 17.25 | CREATIVE TECHNOLOGIES INC. | 24.50  | 0.00  | 0.0   |
| OTC  | 30.75    | 6.50  | DATA RACE INC.             | 10.50  | 0.00  | 0.0   |
| ASE  | 12.50    | 7.50  | DATARAM CORP.              | 9.25   | -0.38 | -3.9  |
| NYS  | 39.00    | 9.25  | EMC CORP.                  | 31.13  | 0.00  | 0.0   |
| OTC  | 10.50    | 5.25  | EMULEX CORP.               | 6.13   | 0.00  | 0.0   |
| OTC  | 20.00    | 14.00 | EVANS & SUTHERLAND         | 17.25  |       | -2.1  |
| OTC  | 20.50    | 7.50  | EXABYTE                    | 15.50  | -0.25 | -1.6  |
| OTC. | 34.00    | 12.25 | INTELLIGENT INFO. SYSTEMS  | 25.75  | 0.13  | 0.5   |
| OTC  | 8.25     | 2.50  | IOMEGA CORP.               | 3.00   | -0.25 | -7.7  |
| OTC  | 14.25    | 5.75  | IPL SYSTEMS INC.           | 7.25   |       | -3.3  |
| OTC  | 24.00    |       | KOMAG INC.                 | 15.63  | .0.88 | -5.3  |
| OTC  | 19.63    | 4.38  | MAXTOR CORP.               | 6.63   | -0.13 | -1.9  |
| OTC  | 10.00    | 5.75  |                            | 7.25   |       | -1.7  |
| NYS  | 117.00   | 97.25 |                            | 109.00 | 0.38  | 0.3   |
| OTC  | 8.00     | 4.00  | PRINTRONIX INC.            | 7.25   |       | 0.0   |
| NYS  | 17.25    | 7.50  | QMS Inc.                   | 10.25  | -0.13 | -1.2  |
| OTC  | 17.88    | 9.38  | QUANTUM CORP.              | 13.75  | -0.25 | -1.8  |
| OTC  | 8.00     | 3.13  | RADIUS INC. (H)            | 8.00   | 0.25  | 3.2   |
| NYS  |          | 11.75 | RECOGNITION EQUIPMENT      | 16.13  |       |       |
| OTC  |          | 3.63  | REXONING.                  |        | 0.00  | 0.0   |
| OTC  | 25.13    | 13.13 | SEAGATE TECHNOLOGY         | 23.63  | -0.25 | -1.0  |
| NYS  |          | 18.00 | STORAGE TECHNOLOGY         | 28.50  |       | 0.0   |
| NYS  | 27.88    | 17.63 | TEKTRONIX INC.             | 21.75  |       | -2.8  |
| NYS  | 88.88    | 69.88 | XEROX CORP.                | 80.63  | -1.13 | -1.4  |

| Ser | vices  |       |                           |       | OFF o. | 41%  |
|-----|--------|-------|---------------------------|-------|--------|------|
| NYS | 4.38   | 1.63  | ALLERION INC.             | 3.25  | 0.00   | 0.0  |
| OTC | 23.75  | 14.88 | AMERICAN MGMT. SYSTEMS    | 20.25 | 0.38   | 1.9  |
| NY5 | 4.75   | 2.38  | ANACOMP INC.              | 3.75  | -0.13  | -3.2 |
| OTC | 23.84  | 14.16 | ANALYSTS INT'L            | 17.75 | 0.38   | 2.2  |
| NYS | 56.50  | 46.88 | AUTO DATA PROCESSING (H)  | 54.00 | -0.38  | -0.7 |
| NYS | 19.88  | 13.00 | CERIDIAN CORP.            | 19.00 | 0.38   | 2.0  |
| NYS | 21.00  | 13.13 | COMDISCO INC.             | 18.63 | 0.13   | 0.7  |
| OTC | 13.38  | 5.16  | COMPUTER HORIZONS         | 11.88 | -0.75  | -5.9 |
| NYS | 100.25 | 70.00 | COMPUTER SCIENCES (H)     | 96.25 | -1.75  | -1.8 |
| NYS | 9.00   | 6.00  | COMPUTER TASK GROUP       | 6.75  | 0.13   | 1.9  |
| NYS | 37.00  | 19.00 | COMPUSA INC.              | 25.63 | -0.63  | -2.4 |
| OTC | 14.13  | 8.00  | CONTROL DATA SYSTMES INC. | 9.00  | -0.13  | -1.4 |
| OTC | 16.00  | 7.00  | CORPORATE SOFTWARE (H)    | 15.00 | -0.63  | -4.0 |
| OTC | 11.75  | 6.63  | EGGHEAD DISCOUNT SOFTWARE | 8.50  | 0.13   | 1.5  |
| NYS | 35.88  | 26.00 | GENERAL MOTORS E (EDS)    | 28.50 | -0.13  | -0.4 |
| OTC | 25.50  | 13.50 | INACOM CORP.              | 16.75 | -0.25  | -1.5 |
| OTC | 24.38  | 8.75  | INTELLIGENT ELECTRONICS   | 24.38 | 1.25   | 5.4  |
| OTC | 17.00  | 9.63  | MERISEL.                  | 14.75 | 0.13   | 0.9  |
| OTC | 37.00  | 7.00  | MICROAGE INC. (H)         | 31.50 | -1.50  | -4.5 |
| OTC | 37.75  | 21,50 | PAYCHEX                   | 32.25 | -2.00  | -5.8 |
| NYS | 87.25  | 21.63 | POLICY MANAGEMENT SYS.    | 26.38 | 0.38   | 1.4  |
| NYS | 43.63  | 24.13 | REYNOLDS AND REYNOLDS     | 41.25 | -0.25  | .0.6 |
| OTC | 24.00  | 13.38 | SELCORP.                  | 23.00 | 0.25   | 1.1  |
| OTC | 26.00  | 17.50 | SHARED MEDICAL SYSTEMS    | 22.13 | -0.13  | -0.6 |
| OTC | 12.63  | 5.75  | SHL SYSTEMHOUSE           | 7.38  | 0.63   | 9.3  |
| OTC | 30.75  | 20.00 | SOFTWARE SPECTRUM INC.    | 20.75 | -0.50  | -2.4 |
| OTC | 42.75  | 26.25 | SUNGARD DATA SYSTEMS      | 35.25 | -1.50  | -4.1 |

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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# **Computer Industry**

Tandy and AST ranked No. 6 and 7 in the PC

market last year with 2.8% and 3.4% shares, respectively. By acquiring Tandy, AST's ranking

jumped up three places.

Units shipped

\*Number based on combination of AST and Tandy 1993 market share

(thousands)

805

#### Briefs

#### SSA results rise

System Software Asso ciates, Inc. last week posted fourth-quarter net earnings of \$9.5 million, = 17% increase from the same period last year. Revenue in the period ended Oct. 31 rose 16% to \$83.2 million, the Chicago developer said. Though earnings sank 12% to \$23.4 million in fiscal 1993, revenue jumped 15% to \$263.4 million. The year-to-year comparison was skewed by accounting changes made to fiscal 1992 results, the company noted.

#### Share offering

KnowledgeWare, Inc. has agreed to seil 1 million shares at \$14.75 a share to several investors, including Mitch-Hutchins Asset Management, well-known financier Irwin Jacobs and others. It intends to use the proceeds to bolster working capital and pay off obligations related to recent acquisitions. Prior to the transaction, the Atlanta software company had 13.3 million outstanding shares.

#### **AST delays**

AST Research, Inc. in Irvine, Calif., has postponed a proposed offering from February to March of zero coupon-convertible subordinated notes due in 2013. The offering, which is being underwritten by Merrill Lyneh & Co., is expected to raise \$100 million for the PC maker. Proceeds will be used for working capital, retirement of bank debt and new product development.

SHORT TAKES Sungard
Recovery Services, Inc. in
Wayne, Pa., has completed
its acquisition of Computer
Recovery Services Corp.,
the disaster recovery unit of
United Computer Services
Corp. in Scottsdale, Ariz....
SNA software developer
Apertus Technologies, Inc.
has agreed to acquire Systems Strategies, Inc., a New
York Unix software house,
from Nynex Corp.'s AGS
Computers, Inc.

PC market share

### AST purchase staves off backlog

of the

market

12.3%

11.8%

9.5%

6.1%

5.6%

By Stephen P. Klett Jr.

AST Research, Inc.'s purchase of Tandy Corp.'s PC manufacturing facilities has not only catapulted it from a seventh-to fourthplace ranking among top PC makers, but it could also be all that stands between AST

Vendor

APPLE

IBM

and the backlog woes affecting the Top 3 companies (see chart).

#### Revenue

So far, fiscal 1994 has been more than kind to the Irvine, Calif... clone maker. AST posted record revenue totaling \$514.4 million - an increase of 80% over the comparable period last vear and 26% over the preceding quarter. Net income was \$8.2 million vs. \$7.6 million for the

same period last year. The company also shipped a record 332,000 units worldwide during the first quarter — an 111% increase over fourth-quarter 1993.

In addition, the recently completed \$111 million deal with Tandy netted four manufacturing plants and the Grid and Vector

product lines [CW, May 31], which, when combined with AST's existing assets, have almost doubled the company's clout.

"The Tandy acquisition was a big plus for AST. All of a sudden, they're No. 4," said Randal Giusto, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H. "From

a volume standpoint, it's a huge success; now they have to focus on image," he added. Giusto said he did not foresee this being a significant problem because AST's "brand name is strong."

Moreover, the additional manufacturing capacity could not have come at a better time, according to Howard Elias, vice president of worldwide marketing at AST. He said AST has sold out all of its prod-

uct line for the fourth calendar quarter and faces backlogs across nearly all its lines as well. "We think this integration goes a long way toward solving this problem," Elias said.

Resellers contacted said that while they faced minimal backlogs on various AST

product lines, they had not experienced significant supply problems.

"We have experienced some supply problems but not any worse than those with IBM and Compaq equipment, not even close," said one reseller, who requested anonymits

#### Manufacturing moves

Quick to react, AST has drawn up worldwide integration plans for Tandy's manufacturing business, including the following:

•Establish two manufacturing centers for mobile computers in Fountain Valley, Caliif., and Taiwan. Establish Fort Worth, Texas, as the center for worldwide production of processors. Move desktop and server production for the Americas from Fountain Valley to Fort Worth.

 Consolidate all distribution and repair from East Kilbride, Scotland, to Limerick, Ireland; shift desktop production from Taiwan to Ireland and Vector and Grid brand production from Scotland to Ireland.

AST expects the restructuring to result in a 40% increase in worldwide manufacturing and to be completed by next June, according to Elias.

To cover these restructuring costs, AST took a onetime charge of \$125 million in the fourth quarter last year and will lay off about 1,050 workers. Nearly half of these cuts — 450 — will be desktop and server manufacturing positions in Fountain Valley.

However, 850 new jobs are expected to be created in Fort Worth and Limerick.

# Maverick will push IBM open

By Ed Scannell

Labeling himself a "maverick" in IBM's relatively conservative corporate culture, James Cannavino said he hopes to be the catalyst who pushes IBM into an era of open standards.

"I think [IBM Chief Executive Officer Louis V. Gerstner] wants me to shake things up a little," said Cannavino, fresh from his appointment as IBM's senior vice president of strategy and development.

Perhaps with that in mind, he admitted in a Comdex/Fall '93 interview that the timehonored concept of account control at IBM is dead. Even so, Cannavino predicted that IEM's mainframe hardware business, long symbolic of the company's proprietary bent, will be profitable for at least another five years. "It is folly to believe you can make customers move to something [when] they don't want to. When you do business with a customer you want to add value, not lock them up with something proprietary," Cannavino said, in what would have amounted to heresy at the old Big Blue.

In that vein, he said the end game of IBM's energized commitment to true open standards is eliminating the need for its largest corporate customers to "place bets" on which de facto standards to back.

#### Taking the risk

"We want to take the risk of betting away from customers who should not be in the gambling business." Cannavino said.

One such example, he said, is that IBM's PowerPC-based systems can run RISC-and complex instruction set computing-compatible operating systems, and the Workplace OS operating system can support multiple personalities — or the look and feel of several graphical environments. So users now have more freedom to tailor an open strategy that goes hand in glove with their computing needs.



James Cannavino, senior VP of strategy and development, hopes to shake things up

But he said he clearly realizes that just saying IBM will do something can no longer hold large corporate accounts in the company's sway. "IBM is going to have to demonstrate it is capable of delivering solutions to real-world problems," Cannavino said

Many corporate managers said they believe Cannavino is moving along the right track, but still, they wonder if IBM will move fast enough to provide those solutions given a school of voracious competitors.

#### INDUSTRY PULSE: Computer industry

| PC | hard | ware |
|----|------|------|
|----|------|------|

| TOP COMPANIES           | WORLDWIDE REVENUE IN MILLIONS |                         |           |           |  |
|-------------------------|-------------------------------|-------------------------|-----------|-----------|--|
|                         | SECOND-<br>QUARTER 1992       | SECOND-<br>QUARTER 1993 | 12 MONTHS | 12 MONTHS |  |
| Apple Computer, Inc.    | \$1,740.2                     | \$1,862.0               | 11.4%     | -2.5%     |  |
| Compaq Computer Corp.   | \$827.0                       | \$1,632.3               | 79.6%     | +5.4%     |  |
| IBM                     | \$1,523.8                     | \$1,539.0               | -8.6%     | -6.4%     |  |
| Dell Computer Corp.     | \$457.5                       | \$700.6                 | 91.5%     | +2.7%     |  |
| Gateway 2000, Inc.      | \$248.6                       | \$441.8                 | 71.3%     | +1.2%     |  |
| Digital Equipment Corp. | \$286.7                       | \$415.7                 | 48.5%     | +0.7%     |  |
| AST Research, Inc.      | \$266.3                       | \$409.2                 | 49.6%     | +0.7%     |  |
| Hewlett-Packard Co.     | \$301.3                       | \$358.5                 | 14.9%     | -0.3%     |  |
| Unisys Corp.            | \$176.7                       | \$163.0                 | -4.3%     | -0.6%     |  |
| Zeos International Ltd. | \$48.8                        | \$52.7                  | -6.4%     | -0.2%     |  |

Gartner Group Yardstick Stamford Conn

#### Average U.S. desktop/tower street prices\*

| DESKTOP/TOWER SYSTEMS | THIRD-<br>QUARTER 1993 | FOURTH-<br>QUARTER 1993 | FIRST-<br>QUARTER 1964 |         |
|-----------------------|------------------------|-------------------------|------------------------|---------|
| 386SX, 33 MHz         | \$920                  | \$890                   | \$850                  | \$810   |
| 486SX, 33 MHz         | \$1,610                | \$1,550                 | \$1,520                | \$1,460 |
| 486DX2, 50 MHz        | \$2,150                | \$2,050                 | \$1,950                | \$1,820 |
| 486DX2, 66 MHz        | \$2,480                | \$2,380                 | \$2,230                | \$2,040 |
| Pentium, 60 MHz       | \$5,420                | \$5,130                 | \$4,950                | \$4,530 |
| Pentium, 66 MHz       | \$6,510                | \$6,120                 | \$5,820                | \$5,250 |

\*Projections Based on average configurations for each time frame; prices do not include monitors

#### The 5th Wave by Rich Tennant

In response to videophone technology, BulbBrain Corp. releases a phone system fitted with a continuous-action flash camera linked through the caller's fax machine.





#### Inside Lines

#### When yoga's not enough

To put some substance behind Notes as an application development platform, Lotus will announce next week at Lotusphere that Informix Software, Powersoft, the ASK Group's Ingres Division and Revelation Technologies will deliver Notes support in the first half of 1994, according to sources close to Lotus. Information Builders has also jumped on the bandwagon (see story page 29). Discussions with Oracle, meanwhile, are ongoing. All of these vendors will join Gupta as Notes tools partners [CW, Oct. 25]. Lotus will also disclose a deal with CompuServe to enable Notes users to replicate databases through the CompuServe public network beginning in 1994. Isocor Corp. will announce delivery of an X.400 router for Notes, which will provide a more robust wide-area network (WAN) for Notes traffic than existing X.25 WANs.

#### **Get out the Novocain**

Remember that FBI proposal to make digital networks more suitable for wiretaps [CW, June 8]? FBI chieftains said the reason for the controversial scheme — code-named Operation Root Canal is that digital traffic is hard to tap, but G-men in the field are not reporting any problems with electronic surveillance. Documents obtained under the Freedom of Information Act by Computer Professionals for Social Responsibility show that FBI efforts to elicit horror stories from field offices came up with a big zero.

#### Reigniting the flame

Candle Corp. President Merritt Lutz suddenly turned up missing from the privately held \$180 million software firm. His departure two weeks ago was followed by a brief memo from founder, Chairman and CEO Aubrey Chernick, who is now also president, company sources said. The company gave no explanation for the management change, but some said Chernick wants to personally drive the strategy beyond its base in the data center and into distributed computing. Lutz arrived three years ago from PDI, a Los Angeles consultancy.

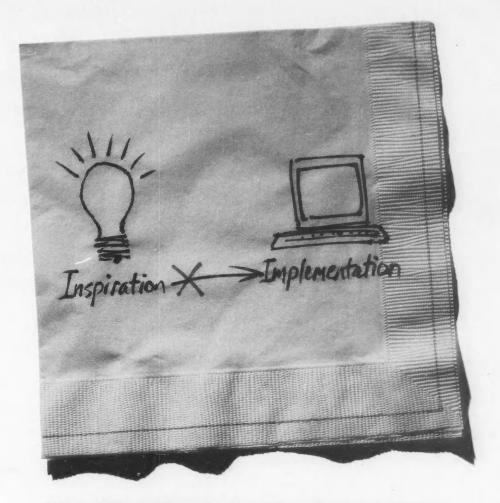
#### Money changes everything

As part of an effort to cozy up to resellers, Digital plans to throw some money at them. Digital, which wants to increase its relatively small indirect channels presence, has a lot of history to overcome. It plans to announce this week that virtually all resellers meeting the minimum sales levels in their contracts will now be able to get marketing funds from the company. Only a small subset of resellers qualified before, and Ed Kamins, vice president of U.S. chan-nels, conceded that Digital has "been behind other vendors in this regard." Digital also plans to provide more extensive training to

#### Uniface takes bite of Apple

Uniface plans this week to disclose that it has ported its client/ server application development tools to the Macintosh, a source close to Uniface said. The deal is being touted as a way to integrate Macintoshes into corporate computing. In theory, Macintosh users could build applications for that platform but quickly port the software to Unix and vice versa. Powersoft and Gupta, Uniface's major client/server tools rivals, do not support the Macintosh. The product is expected to ship early next year, the source said.

CSC Index's latest Indications publication ought to get an award for "virtual" abuse — it talks about virtual teams, virtual structures and virtual decentralization, complete with definitions for each. Gimme a virtual break. Meanwhile, Robert Eccles, a former Harvard B-school prof who now heads an "advisory capital" firm, brought back a new word from a recent trip to England: "rightplacing." It's what you do with the people who lose their jobs after you've rightsized your organization, he told attendees at a recent SIM chapter meeting in Boston. Right. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voicemail tip line at (508) 820-8555.



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